

The composition of INFL

An exploration of *tense*, *tenseless* languages, and *tenseless* constructions

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Received: 29 April 2012 / Accepted: 28 May 2013 / Published online: 15 July 2014
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Abstract The central goal of this article is to argue that functional categories are universally associated with a core function but that their substantive content is subject to variation. We review evidence from Ritter and Wiltschko (2009) based on language variation: INFL may be associated with temporal, spatial, or participant marking. This paper explores the properties of the universal category INFL in clauses where it remains without substantive content. We show that languages pattern in similar ways in these contexts. That is, in the absence of variable substantive content, the universal formal properties of INFL emerge.

Keywords Tense · Tenselessness · Functional categories · Variation · Infinitives · Imperatives · Counterfactuals · Case

1 Introduction

1.1 Sapir's problem: language variation in categorial inventories

Languages differ in the morpho-syntactic categories they make use of, and as a consequence they differ in their formal organization of meaning (cf. Sapir 1921). For

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example, in most Indo-European languages every indicative root clause must be morphologically marked for *tense* (present or past).

- (1) a. Yoshi **is** playing.
b. Yoshi **was** playing.

Obligatory m(orphological)-marking for tense, however, is not a language universal. In many indigenous languages of the Americas, morphological tense marking is either optional or simply unattested. For example, in Halkomelem (Central Coast Salish) there is a morpheme expressing past time (*-lh* in (2a)), but its use is not obligatory. Consequently, the absence of overt past marking does not necessarily signal that the event is ongoing (i.e., present time), as shown in (2b).¹

- (2) a. *í-lh* *qw'eyílex tútl'ò*
 AUX-PAST dance he
 'He was dancing.'
b. *í* *qw'eyílex tútl'ò*
 AUX dance he
 'He is/was dancing.'

Similarly, in Blackfoot (Algonquian), which lacks a dedicated past marker (Ritter and Wiltschko 2004), a clause that lacks overt m-marking for tense is compatible with either a present or a past time interpretation.

- (3) *Oma* *píítaawa* *áípaawaniwa.*
om-wa píítaa-wa a-ipaawani-wa
DEM-PROX eagle-PROX IMPF-fly.AI-PROX
'That eagle is/was flying up.'

(adapted from Reis Silva and Matthewson 2007:(8))

This suggests that not all languages make use of the same morpho-syntactic categories. In this article, we explore the formal underpinnings of the observed morpho-syntactic variation in categorial inventories. Our analysis is couched within the Principles and Parameters framework in its Minimalist incarnation (Chomsky 1995a, 1995b, 2001). Within this framework it is assumed that all languages have the same abstract building blocks, with variation restricted to morphological features (Borer 1984). Moreover, it is usually assumed that all languages share the same set of categories. So how do we come to terms—within this uni-

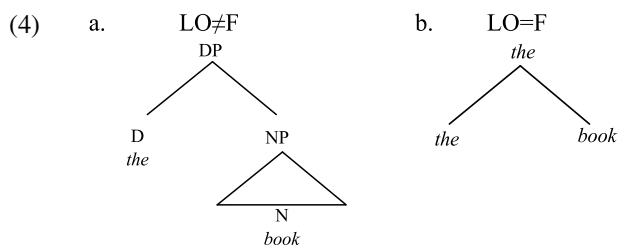
¹Unless otherwise indicated, data is from our own field-work. The following abbreviations are used in this paper: 1/2/3—1st/2nd/3rd person; AI—animate intransitive; AUX—auxiliary; CF—counterfactual; COIN—coincidence; CONJ—conjunct order; DEM—demonstrative; DET—definite article; DIST—distal; DUR—durative; EV-SIT—event situation; F—feminine; FUT—future; IMPF—imperfective; INF—infinitive; INT—intensifier; INTR—intransitive; INV—inverse; LOC—locative; M—masculine; NEG—negation; NOM—nominative; NON.FACT—non-factive; OBV—obviative; PART—participant; PERF—perfective; PL—plural; POSS—possessor; PRES—present; PRO-SIT—pronominal situation; PROX—proximate; PRT—particle; Q—question; REFL—reflexive; SG—singular; SUBJ—subject; SGS—singular subject; SS—subjunctive subject; TA—transitive animate; TNS—tense; TR—transitive; UT-SIT—utterance situation.

versalist approach—with the variation in morpho-syntactic categories observed above?

To answer this question, it is necessary to define what we mean by category.

1.2 Defining categories

The grammar of any natural language makes use of two broad types of categories: (i) lexical categories (e.g., nouns and verbs) and (ii) functional categories (e.g., determiners and complementizers).² It is only the second type of categories that we are concerned with in this paper. There are however (at least) two uses of functional categories available. On the one hand we can identify the category of a given word-class (such as *determiner*) or morpheme-class (such as the inflectional paradigm for *tense*). On the other hand, generative linguists since the 1980s have identified a set of functional categories which exist independently of the specific lexical items that occupy them. These functional categories include (but are not limited to) D(ETERMINER), C(OMPLEMENTIZER) and T(ENSE) or I(NFL). While the existence of such categories was a standard assumption within the framework of Government and Binding Theory (GB), it no longer is within the Minimalist program, where categories do not exist independently of the lexical items that may be associated with a categorial feature. This difference in assumption manifests itself in the way we represent syntactic structures. While in GB the phrase *the book* would be represented as in (4a) (omitting intermediate projections), in the Minimalist program it would lack any categorial labels as in (4b). In (4a) functional category labels (F) exist independently of the words, morphemes or other linguistic objects (LO) that instantiate them. In (4b), on the other hand, the label is simply a property of the LO; it has no independent status.



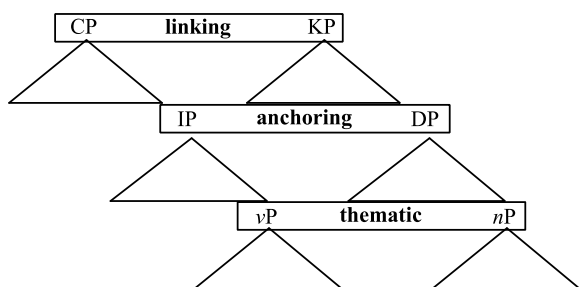
In this paper, we will adopt the former approach according to which syntactic trees consist of a universally determined set of hierarchically organized functional categories. We refer to this as the *syntactic spine*.

There are two main reasons for our assumption that there exists a universal syntactic spine. First, there is a striking parallelism between functional projections dom-

²Different scholars define categories in different ways, depending on their field of investigation (e.g., grammar or cognition), their theoretical orientation (e.g., formal or functional), as well as their object of study (e.g., categories or categorization; see Cohen and Lefebvre 2005 for detailed discussion). In this paper we take a formalist approach, and concern ourselves with categories, rather than categorization.

inating nouns and functional projections dominating verbs. The parallels are roughly as follows: The lexical projections of N and V compose the thematic domain. INFL, the category we are concerned with here, parallels D (Abney 1987). The function of INFL and D is to locate the event or individual in time or space. We refer to the domain so defined as the *anchoring domain* and hence we refer to INFL (and D) as the *anchoring category*. And finally, the nominal counterpart of C is K (Bittner and Hale 1996), which defines a domain where the existing structure is linked to the larger structure (Travis 2005:327, attributed to Ken Hale MIT classes in the 1980s; see also Grohmann 2003). This parallelism, schematized in (5), would be coincidental if there was no universally pre-determined order in the projection of functional categories.

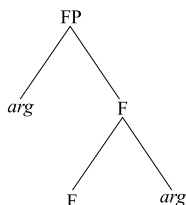
(5) The universal spine



The second reason to assume a syntactic spine has to do with the mapping between lexical items and syntactic categories. The two hypotheses in (4) make different predictions. Under the $LO \neq F$ -hypothesis there is a label (e.g., D) which is part of the syntactic spine and which exists independently of the LO that occupies it. On this view we may expect mismatches between the categorial identity of the LO and the categorial identity of the functional category LO occupies. In contrast, under the $LO = F$ hypothesis, the LO is all there is and consequently, we would not expect any such mismatches. Evidence suggests that there are indeed mismatches. Take for example the functional category D (Abney 1987). One may be tempted to take membership in the word-class *determiner* to be a necessary and sufficient condition to be inserted in D. However, this is not so. On the one hand, there are LOs other than members of the determiner word class which may occupy D (either via base-generation or via movement). This includes *names* (Longobardi 1994), nouns (Ritter 1988), pronouns (Elbourne 2005), or an unpronounced LO such as the silent existential determiner of Longobardi (1994), for example. This establishes that membership in a particular word-class does not suffice to define the LOs which associate with D. On the other hand, there are elements which seem to belong to the word-class determiner but which have been argued to not occupy D. This includes the indefinite determiner in English (Lyons 1999) and demonstrative determiners (Giusti 1993). But if functional categories are not to be defined on the basis of the categorial identity of

the LOs that occupy them, then they must exist independently of these LOs.³ What this means then is that there are two different types of categories we need to identify: (i) the categories of language-specific LOs (word classes) and (ii) the categories that define the universal spine (F). F is a head which determines the categorial identity of the phrase it creates. Furthermore, it makes available phrasal positions which it relates to each other in particular ways such that specific instances of F may place certain restrictions on the types of phrases that may occupy these syntactic positions.

(6) A category in the syntactic spine⁴



The focus of this paper is on one particular category of the universal syntactic spine, namely the verbal anchoring category known as INFL.

1.3 Coming to terms with category variation within a universalist setting

To account for the observed variation in morpho-syntactic categories we put forward the Parametric Substantiation Hypothesis summarized in (7).

(7) Parametric Substantiation Hypothesis:

- a. Universal Grammar makes available a set of hierarchically organized functional categories: the universal spine.
- b. Languages vary in the substantive content associated with functional categories.

Implicit in this statement is the assumption that functional categories contain grammatical content that is both substantive and non-substantive. By substantive grammatical content we mean content that can only be interpreted with reference to the extra-linguistic context, such as present or past tense. Substantive grammatical content is distinguished from substantive lexical content in that only the former is paradigmatic and expressed as formal features in the syntactic representation. It is also distinguished from non-substantive grammatical content, which serves only to

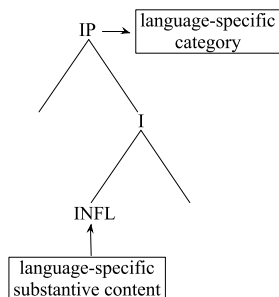
³The Minimalist solution to this problem is to assume that what is being computed are abstract features (without sounds). Accordingly, functional categories would be defined by means of the features that comprise them. The LO=F hypothesis thus reduces to a 'feature = functional category hypothesis' and complex feature bundles can only be generated via syntactic computation (AGREE). These complex feature bundles are later realized via the appropriate vocabulary items (VI) by late insertion (see also Halle and Marantz 1993). This shifts the question about the inventory of categories to the inventory of features, and thus provides an answer to the concern about the relation between LO and F. However, it still doesn't explain the parallelism between the nominal and the verbal projections.

⁴We will use the notation FP (instead of F) for convenience only. It does not have any theoretical status, just as in bare phrase structure (Chomsky 1995b).

relate the different elements within the structure. The latter, which we shall represent as $[\pm\text{coincidence}]$, makes a contribution to semantic interpretation without recourse to encyclopedic knowledge of any sort.⁵

According to the Parametric Substantiation Hypothesis one way in which the variation in the inventory of morpho-syntactic categories can come about is by the association of language-specific substantive content with the universal syntactic spine.⁶ In particular, language-specific LOs associate with F to derive morpho-syntactic categories.

(8) The relation between language-specific categories and the universal spine



According to the Parametric Substantiation Hypothesis, the categorial identity of a functional category is dissociated from its substantive content. This implies that the morpho-syntactic category TENSE is decomposable into its substantive content (*present* vs. *past*) and the abstract functional category that hosts it, namely INFL. Accordingly, tenseless languages such as Halkomelem and Blackfoot are defined as languages where INFL does not associate with temporal content. Rather, it has other substantive content compatible with the function defined by its domain, namely *anchoring*. Ritter and Wiltchko (2009), hypothesize that INFL requires deictic substantive content, i.e., content whose denotation is determined by the utterance context, including not only tense, but also location and person. This hypothesis was informed by their analysis of INFL as specified for location in Halkomelem and for person in Blackfoot. We review the main arguments of this work in Sect. 2. The conclusion to be drawn is that languages do indeed differ in their formal organization of meaning. In particular, they differ in the content of functional categories (i.e., tense, location, or participant), but not in their core function (i.e., anchoring).

The main purpose of the present paper is to explore the properties of the universal category INFL in more detail. What are the properties intrinsic to the category that

⁵This view of substantive content departs from that of Chomsky (1995a:54), who asserts that “[i]tems of the lexicon are of two general types: with or without substantive content.” For Chomsky, lexical categories are those that have substantive content; functional categories are those that do not. We contend, however, that all categories may have substantive content, and that the difference is due to the presence or absence of non-substantive content. INFL is a typical functional category, in that it consistently bears non-substantive content, whereas its substantive content is sometimes absent, and when present, is subject to cross-linguistic variation.

⁶In addition to variation in the meaning associated with the spine, languages may also vary with respect to how and where sound associates with the spine and in the way LOs are categorized (see Wiltchko 2014).

exist independently of its morphological feature content? To answer this question we first investigate clause types that are often considered to be *tenseless*: infinitives in Sect. 3, and imperatives and counterfactuals in Sect. 4. We show that the dissociation of core function from substantive content allows for an empirically and theoretically adequate analysis of these constructions. Furthermore, we show that in such environments where INFL is contentless, the differences between *tense*-based, *location*-based, and *participant*-based languages disappear, precisely because the universal properties of INFL emerge.

In Sect. 5, we explore the role that INFL plays in the licensing of nominal arguments (i.e., *case*). In particular, the proposed dissociation of INFL from its temporal content leads us to ask whether it is the universal category INFL itself which functions as the case-licenser or whether tense features are a necessary ingredient for case-licensing. We establish that tenselessness is not a reliable predictor of caselessness.

In Sect. 6, we conclude with a discussion of the theoretical as well as methodological implications of the Parametric Substantiation Hypothesis.

2 Exploring INFL in tenseless languages

The central goal of this article is to argue that functional categories are universally associated with a core function but that their substantive content is subject to variation. We first discuss the problem that tenseless languages pose in the context of the principles and parameters framework (Sect. 2.1). We then summarize Ritter and Wiltchko's (2009) arguments for the Parametric Substantiation Hypothesis (Sect. 2.2). And in Sect. 2.3, we introduce the formal implementation of parametric substantiation, which will serve as the framework for the exploration of tenseless constructions and case.

2.1 The categorial identity of the head of the clause

In the early days of generative grammar, clauses were assumed to be exocentric phrases, consisting of the subject NP, the predicate VP, and optional auxiliary verbs. The node immediately dominating NP (Aux) and VP was labeled S (for Sentence), as schematized in (9).

- (9) $s[NP \quad (AUX) \quad VP]$

However, with the rise of X-bar theory and the hypothesis that *all* phrases are endocentric, the structure in (9) became untenable, particularly because S behaves like a regular phrase (e.g. it can serve as a complement of V). The problem was solved by Chomsky's (1981:52) proposal that tense features (along with AGR, which is responsible for subject-verb agreement) constitute the content of a syntactic category INFL. For Chomsky, the label INFL signaled that this category represented verbal inflection. Subsequently, Travis (1984) provided compelling evidence that INFL was the head of S (=IP), based on its role in head movement phenomena. The revised

structure is shown in (10). We add the subscript *tns* to indicate that tense features constitute the interpretable content of INFL.⁷

$$(10) \quad \text{IP}[\text{INFL}_{\text{tns}} \quad \text{VP}[\text{V}_{\{\text{present}, \text{past}\}}]]$$

Other evidence supports the view that the distribution of verbal inflection is syntactically conditioned, and in particular that it fits the characteristics of a syntactic head. It is obligatory and unique; it interacts systematically with the head of its complement (VP); the main verb is only inflected in the absence of an auxiliary verb; and it interacts with the head that selects it (COMP): verbal inflection for tense and agreement is restricted to certain clause-types (assuming that clause-typing is a function of COMP; Cheng 1991).

Ever since Pollock's seminal paper (Pollock 1989), however, the categorial identity of the functional head hosting the inflectional tense features has been equated with its content, thus the label TENSE in (11).

$$(11) \quad \text{TP}[\text{TENSE} \quad \text{VP}[\text{V}_{\{\text{present}, \text{past}\}}]]$$

In fact, what Pollock's (1989) study showed was that there is evidence for two head positions between the V and COMP, prompting him to propose the decomposition of INFL into TENSE and AGR. Subsequent research has challenged the conceptual and empirical motivation for a separate category AGR, with many assuming that the lower head position is in fact ASPECT (Ouhalla 1991; van Gelderen 1993). Here, we challenge the conceptual and empirical motivation for TENSE as a category, arguing for the pre-Pollockian view of tense features as part of the content of INFL.⁸

Following Chomsky (1995a, 1995b), much current research assumes that TENSE, rather than INFL, is a category of Universal Grammar, and that TENSE functions as the head of the clause across all languages. We note, however, that the identity of this category as TENSE is an accident of history. The field was led to this conclusion by virtue of the obligatory presence of tense morphology in indicative clauses of most Indo-European languages. Thus, if the main object of investigation for generative grammarians had been languages where verbs are not obligatorily inflected for tense (such as Halkomelem and Blackfoot) the head of the clause would not have been analyzed as hosting tense features. Consequently, the path towards the assumption that the head of the clause is TENSE would not have been paved. Of course, this does not imply that we could not have come to the same conclusion via a different route. So what evidence is there in support of the claim that the universal head of the clause *is* TENSE?

We have already seen that the evidence cannot derive from verbal inflection: not all languages have obligatory tense inflection (*m-tense*). In Halkomelem, past marking is optional (see example (2) above) while in Blackfoot there are no dedicated morphological markers for *present* or *past* (see example (3) above). If the presence of obligatory *m-tense* were a necessary and sufficient condition for the postulation

⁷We abstract away from agreement for the purpose of the following discussion.

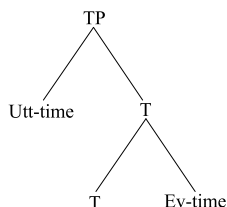
⁸We assume here without further discussion that Pollock's (1989) observation that we need two syntactic positions to capture the word order facts of French is captured by the postulation of INFL and ASPECT, instead of INFL and AGR.

of the category TENSE, we would have to conclude that Halkomelem and Blackfoot lack TENSE. On the assumption that TENSE is the head of the clause we would then be forced to conclude that such languages lack this particular clausal head altogether (see Wiltschko 2002 for Halkomelem, Ritter and Wiltschko 2004 for Blackfoot, as well as Shaer 2003 and Bittner 2005 for West Greenlandic).

(12) CP[COMP VP[V]] TENSELESS CLAUSE

The view that the head of the clause is identified by its substantive content raises the possibility that it is associated with a dedicated semantic function. Much research on the syntax/semantics interface has sought to identify the precise nature of this function. Following Zagona (1990, 1993, 1995) and Demirdache and Uribe-Extebarria (1997, 2000) we assume that TENSE serves to relate the event time to the utterance time.⁹

(13) The function of Tense¹⁰



On this view, the core function of TENSE is that of *anchoring* (Enç 1987). The central problem that this assumption raises is the following: How can languages be tenseless but still satisfy the anchoring function of TENSE (Matthewson 2003, 2005, 2006)?¹¹

Two directions for addressing this problem present themselves. Either TENSE is universal, even if tense morphology is not, or anchoring is universal but need not be mediated by TENSE. In this paper we provide evidence in support of the latter hypothesis, in part because there is no principled reason as to why UG should privilege temporality as its anchoring category (Ritter and Wiltschko 2005). Moreover, if

⁹For the purpose of this discussion, we abstract away from aspect, which is introduced in ASPECT, a functional category above VP but below IP. Note that we take Aspect to be a core abstract function that can be instantiated by different types of substantive content (see for example Bliss et al. 2010 for an analysis of Blackfoot's direct inverse system as instantiating person-based ASPECT).

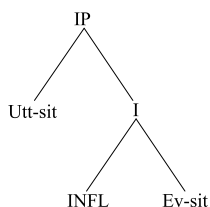
¹⁰We simplify here in assuming Ev-time to serve as the complement of T, to follow the schema for functional categories we have introduced in (6). Most analyses would however assume Ev-time to be associated with the specifier of T's complement (i.e., SpecVP). The structure in (13) could be maintained under Williams' (2003) conception of phrase structure according to which the spine consists of several subtrees (such as the one in (13))—each associated with its own level of representation.

¹¹Matthewson's (2006) approach is to highlight the universality of patterns of temporal interpretation even in superficially tenseless languages. Her approach thus differs from ours in that we are interested in understanding the **morpho-syntactic** patterns of 'superficial tenselessness', i.e., the variation in morpho-syntactic categories. Note also that Matthewson's approach is problematic in light of much contemporary formal semantic research on temporal reference in tenseless languages that shows that temporal reference in such languages is not constrained by (covert) tense (see Bohnemeyer 2009; Bittner 2005, 2011 and Tonhauser 2011). What remains to be seen is how the relation between semantic patterns of temporal interpretation and morpho-syntactic patterns of tense marking should be modeled.

we assume the existence of a universal generalized anchoring category relating the event situation to the utterance situation, this would solve the anchoring problem in tenseless languages.¹²

In the absence of evidence for the universality of a functional category TENSE, we propose to return to the pre-Pollockian view according to which the universal head of the clause is INFL, which can but need not host morphological tense features. Specifically, we will assume following Ritter and Wiltschko (2009) that INFL serves as the universal anchoring category, but that it is not intrinsically associated with substantive content as in (14).

(14) INFL as the universal anchoring category



The substantive content associated with INFL is subject to cross-linguistic variation. Given that such variation is tied to the choice of morpho-syntactic features, we can conclude that the language-specific substantive content associated with INFL manifests itself via m(orphological)-marking.¹³ In the next subsection, we review Ritter and Wiltschko's evidence that INFL in matrix indicative clauses is associated with substantive content that varies across languages.

2.2 INFL can host features other than tense

Contrastive m-marking serves as the initial diagnostic for identifying the language-specific feature associated with INFL (Ritter and Wiltschko 2009). By *contrastive marking* we mean the classic Trubetzkoyan notion of featural opposition. That is, a contrastive feature is one that has content even in the absence of marking. For example, present tense in English is not overtly marked, but is strictly defined in opposition to past tense.¹⁴ Thus, contrast defines a systematic pattern which allows the grammar to manipulate specific LOs even if they are not overtly marked with a value for a particular feature.¹⁵

¹²Another way of addressing this problem would be to assume that the reference time is introduced by different means, e.g., by the verb itself, as for example in Shaer (2003). See also Bittner (2005, 2011), Bohnemeyer (2009), and Tonhauser (2011).

¹³The term m-marking is not meant to be restricted to bound morphology or inflection. Free morphemes, such as the auxiliaries in Halkomelem, are equally included. Thus, the traditional label INFL, which we maintain for the anchoring category is not to be taken literally. Generally, morphological type—just as word-class—cannot serve to define universal categories, since such categories are necessarily language-specific (Wiltschko, 2014).

¹⁴We assume that the suffix *-s* that appears on 3rd person singular verbs in the present tense indicates subject agreement, rather than tense. More specifically, we assume, following Kayne (2000:188), that it expresses singular number agreement.

¹⁵For a detailed discussion of contrast as a discovery procedure see Wiltschko (2014).

As we have already seen, tense marking is not contrastive in either Halkomelem or Blackfoot. In both Halkomelem (2) and Blackfoot (3), the absence of past marking does not imply present tense. The core claim in Ritter and Wiltschko (2005) is that some other type of contrastive m-marking serves the anchoring function in these languages. In particular, contrastive m-marking in Halkomelem indicative clauses takes the form of locative auxiliaries, which contrast along a spatial dimension. The proximate auxiliary *i* is used if the location of the reported event is the same as the location of the utterance. In contrast, the distal auxiliary *li* is used if the location of the reported event is elsewhere (Galloway 1993; Suttles 2004).

- (15) a. *í* *qw'eyílex tútl'ò* Halkomelem
 PROX dance he
 'He is/was dancing [here].'
 b. *lí* *qw'eyílex tútl'ò*
 DIST dance he
 'He is/was dancing [there].'

The locative auxiliaries thus serve as the anchoring category: they assert *where* relative to the utterance the event took place (see also Gerds 2010).

In Blackfoot, another type of contrastive m-marking serves the anchoring function of INFL in matrix indicative clauses. Here the relevant dimension involves a third core deictic category, namely person, and it is expressed by a small closed set of verbal suffixes called ORDER markers in the Algonquianist tradition (see also Déchaine and Wiltschko, 2014). The order suffix *-hp* is used in root indicative clauses to signal that at least one participant of the reported event is also an utterance participant, i.e., a local (1st or 2nd) person.¹⁶ The absence of an overt ORDER suffix in this type of clause indicates that none of the event participants is also an utterance participant. In other words, all event participants are 'others', i.e., 3rd person.

- (16) a. *Kitsinóóhp*oaawa. b. *Kitsinóókihp*oaawa.
 kit-ino-o-**hp**-oaawa kit-ino-oki-**hp**-oaawa
 2-see.TA-1:2-LOCAL-2PL 2-see.TA-2:1-LOCAL-2PL
 'I saw you (pl).'
- c. *Anna* *pookááwa inoyííwa*
 ann-wa pookaa-wa ino-yii-Ø-wa
 DEM-PROX child-PROX see.TA-3:4-NONLOCAL-PROX
 anni *imitááyí.*
 ann-yi imitaa-yi
 DEM-OBV dog-OBV
 'The child saw the dog.'

¹⁶This departs from the analysis in Ritter and Wiltschko (2009), where the person prefixes were analyzed as the relevant contrastive markers. The current analysis has two advantages over our original proposal: First, Blackfoot ORDER markers, like all other verbal inflectional morphemes, are realized as suffixes, but person markers are prefixes. Second, the relevant contrast between utterance participants and others is directly expressed in order suffixes but not in person prefixes. As noted above, order suffixes indicate only local (1st and 2nd) vs. 3rd person, but person prefixes have distinct forms for 1st and 2nd person, which unnecessarily complicates the analysis. We now follow Déchaine and Wiltschko (2010) who argue that these person prefixes occupy SpecIP.

We attribute the absence of an overt ORDER suffix to the presence of a zero morpheme in (16c). Thus, regardless of phonetic content, the person-based suffixes in (16) serve to anchor the event to the utterance. In this case, what is marked is whether or not one of the event participants is also an utterance participant.¹⁷

In Ritter and Wiltschko (2009), the functional equivalence of contrastive tense in English with location marking in Halkomelem and person marking in Blackfoot is argued to be a result of their categorial equivalence. Because the three languages differ in the substantive content of contrastive m-marking, we get the impression that we are dealing with instances of distinct categories. On our analysis, however, these categories instantiate the same abstract anchoring category, namely INFL. As such INFL can be viewed as a universal *catagoreme* with language-specific *allocategories*. In other words, regardless of substantive content, the contrastive m-marking which—in matrix indicative clauses—serves to anchor the event to the utterance associates with the anchoring category INFL.

(17)	a.	CP[... COMP	IP[INFL _{ins}	VP[V _{present, past}]]]	English
	b.	CP[... COMP	IP[INFL _{loc}	VP[V _{prox, distal}]]]	Halkomelem
	c.	CP[... COMP	IP[INFL _{part}	VP[V _{local, other}]]]	Blackfoot

Given the assumption of a universal spine consisting of functional categories that are defined by virtue of their function (such as anchoring) rather than their substantive content, it follows that function may serve as a discovery procedure for language-specific instances of a universal category.

To support the claim that we are indeed dealing with the same category, Ritter and Wiltschko (2009) further show that tense, location, and participant marking have the same formal properties (in addition to being functionally equivalent and in complementary distribution).¹⁸ Crucially, the distribution of the three types of contrastive markers is syntactically conditioned in ways that are strikingly similar. All three types of m-markers are unique and obligatory in indicative matrix clauses, but they are categorically excluded in other clause-types, such as imperatives and certain types of embedded clauses. Assuming that clause-typing is encoded in COMP, this suggests

¹⁷An anonymous reviewer asks whether one might alternatively treat languages that lack the morpho-syntactic category TENSE as having a silent tense marker that serves to value the unvalued coincidence feature in INFL. For example, Matthewson (2006) proposes that the superficially tenseless language St'at'imcets has a silent tense morpheme. We submit that only those silent categories that stand in contrastive opposition with an overt marker can function in this way. On our view, the presence of a silent tense morpheme which is vague between a present and a past interpretation is not recoverable. Note that the issue of recoverability does not arise if TENSE is assumed to be a universal category, as in Matthewson (2006).

¹⁸An anonymous reviewer asks whether a language could use more than one type of substantive content to substantiate INFL. At present we have no reason to believe that this is ruled out by UG and thus it remains an empirical question. However, we maintain that any given instance of INFL is valued by one and only one type of substantive content. In part this has to do with the fact that the language-specific content of INFL must be compatible with the content of other categories within the spine, in particular Aspect. We assume that when INFL lacks specific substantive content it relates situations to one another without reference to time, location or participants (see Sect. 3 for details). It is also possible that different clause-types within a single language make use of different types of substantive content throughout the syntactic spine. We leave this interesting typological question for future research.

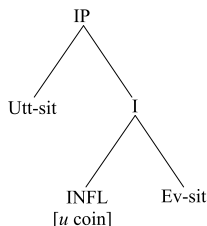
that all three markers interact with COMP, which is expected if they are associated with INFL, the head immediately below COMP. We discuss these clause types that lack m-marking in INFL in detail in Sects. 3 and 4 as they provide us with a window into the formal properties of INFL without substantive content. In order for our exploration of the formal properties of INFL to proceed, we need to have an understanding of how the language-specific substantive content interacts with INFL in the first place. In other words, we need to formalize anchoring. This is the task we take on in the next subsection.

2.3 Formalizing anchoring

Building on Ritter and Wiltschko (2009), we assume that the universal anchoring function of INFL is a result of the following constellation of facts: First, as mentioned in Sect. 2.1, we assume that—in matrix indicative clauses—INFL relates the event situation to the utterance situation (see (14)). We shall argue in Sect. 3, that the abstract argument in SpecIP is in fact a pronominal situation variable (Pro-sit), which—in the absence of a proper antecedent—is interpreted deictically. But for now we represent the relevant argument as Utt-sit to reflect its deictic interpretation.

Second, building on work by Demirdache and Uribe-Extbarria (1997), we assume that at the initial state of language acquisition, INFL is intrinsically associated with an abstract unvalued *coincidence* feature (henceforth [*u* coin]) (see also Mezhevich 2008a, 2008b). This is schematized in (18).

(18) Formalizing anchoring



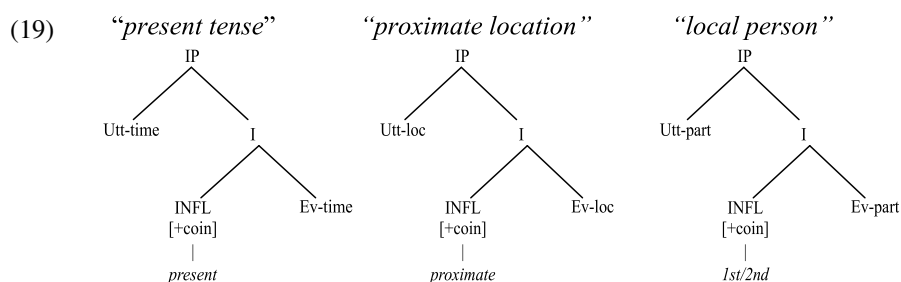
Coincidence as a central and universal characteristic of a variety of grammatical categories was first introduced by Hale (1986), who argues that it is “the definition of spatial, temporal and identity relations in terms of ‘central’ versus ‘non-central’ (or ‘terminal’) coincidence” (Hale 1986:238). Here, we follow Hale’s conceptualization of coincidence, rather than that of Demirdache and Uribe-Extbarria (1997), in assuming that coincidence encompasses relations other than temporal ones, including spatial relations as well as relations between individuals (see also Welch 2012).

Our central proposal here is that the unvalued coincidence feature in INFL must be valued in the course of the derivation; otherwise, the derivation will crash. At least in indicative clauses the substantive content of the m-marking LO serves to value [*u* coin], regardless of whether it is temporal, spatial or participant-based.^{19,20}

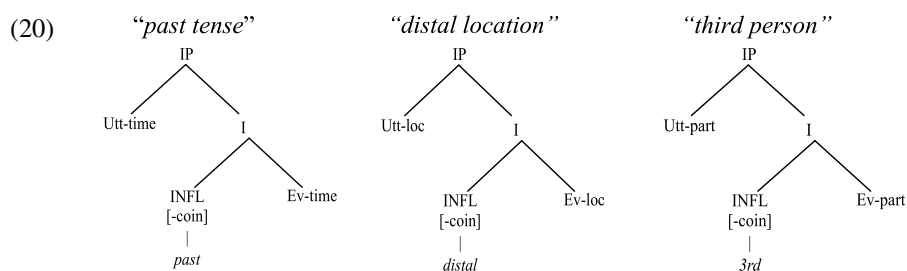
¹⁹We assume that unvalued features are uninterpretable and are represented as [*u*F] (Chomsky 2001; Pesetsky and Torrego 2007).

²⁰This departs from existing approaches according to which an unvalued feature [*u*F] is valued by an interpretable feature [*i*F] via the operation AGREE. It would of course be possible to associate corresponding interpretable features with the relevant LOs but we don’t see a necessity for this.

It will always be the substantive content of INFL that establishes a direct relation to the utterance context. Moreover, it is the particular substantive content that determines which properties of the two situations are ordered. Temporal content will order times, spatial content will order places, and person content will order participant-roles. Thus, the content of INFL places restrictions on the interpretation of the arguments that are being ordered. In particular, present tense, proximate location or local (1st or 2nd) person will value $[ucoin]$ as $[+coin]$, thereby asserting that the time, location or designated participant of the event situation coincides with that of the utterance situation.²¹ As schematized in (19), present tense asserts that the event time coincides with the utterance time, proximate location asserts that the event location coincides with the utterance location, and local participant asserts that the designated event participant coincides with an utterance participant.



Similarly, past (or future) tense, distal location and third person will value $[ucoin]$ as $[-coin]$, thereby asserting that the time, location or designated participant of the event situation does not coincide with that of the utterance situation. As schematized in (20), past tense asserts that the event time does not coincide with the utterance time, distal location asserts that the event location does not coincide with the utterance location, and third person asserts that the designated event participant does not coincide with an utterance participant.



What does it mean for situations to coincide in terms of time, location, or participant? According to Mezhevich (2008a), coincidence along the temporal dimension holds if two time intervals (trivially including instantaneous intervals, i.e., points in

²¹Following Bliss et al. (2010), we assume that Aspect in Blackfoot encodes point-of-view, rather than temporal viewpoint aspect, and that SpecAspect in this language is filled by the Point-of-View holder. The PoV holder is the designated event participant that is (or is not) coincident with an utterance participant, i.e., with the speaker or addressee.

time) overlap while non-coincidence holds if they do not. She describes this opposition informally as joint versus disjoint reference. Extending this characterization to the spatial dimension, coincidence holds if two regions in space overlap. Finally, relative to participants, coincidence holds if two participant roles overlap.²² Because an individual holds the utterance participant roles only temporarily, this means that the coincidence relation will only be concerned with stages of an individual, not the individual itself.

Our hypothesis is quite simply that anchoring is more general than previously thought. While Enç (1987), Stowell (1993), Demirdache and Uribe-Extebarria (1997) were right about anchoring being a temporal notion for the systems that they analyze, consideration of other types of languages requires us to broaden our definition of this notion. We submit that the facts of Halkomelem and Blackfoot can only be understood if we dispense with the view that anchors are necessarily temporal intervals of reference, and recognize that spatial intervals of reference and individuals of reference (conceived of as stages) may also function as anchors. This hypothesis predicts that there should be languages without tense, but we should not expect to find a language that has no anchoring category.

In sum, the coincidence feature associated with INFL is not inherently temporal: it is possible to define coincidence relations relative to time, space, as well as stages of participants. It establishes a relation between two arguments, whose particular content is defined by the language-specific substantive content associated with INFL. The presence of the coincidence feature in INFL along with the particular arguments INFL orders is the hallmark of anchoring. In particular, as the anchoring category, INFL relates the event to the utterance: this is an instance of *deictic anchoring*. The kind of anchoring we find in matrix indicative clauses is however not the only type of anchoring (see Enç 1987). Rather, as we discuss in detail in Sects. 3 and 4, in other clause-types the argument in SpecIP is not deictic (i.e., referring to the utterance situation), but is instead anaphoric: this is an instance of *anaphoric anchoring*.²³

2.4 Predictions

If the coincidence function of INFL and its temporal content are dissociated, then we expect each of them to have a life of its own. There are three core predictions that follow from this claim.

²²Hale's original (1986) characterization of (central) coincidence is more restricted: it applies only to instances where the structurally higher argument (the "figure") is co-extensive with, or included in, the structurally lower one ("the ground"). In set-theoretic terms, the set denoted by the figure must be subsumed by the set denoted by the ground. Welch (2012) applies this more restricted notion of coincidence to the relation between nominal arguments of copula verbs. Our decision to adopt Mezhevich's characterization is motivated by consideration of contexts where the utterance situation extends beyond the event situation. For example, an utterance always contains two participants, the speaker and the addressee. Consequently, an event whose designated participant is either the speaker or the addressee is one that only coincides with the utterance if we assume Mezhevich's less restrictive definition but not if we adopt Hale's more restrictive one. Empirical evidence discussed in Sect. 2.2 indicates that in Blackfoot INFL has the value [+coincidence] in these cases.

²³This is not a special property of the argument associated with INFL: many pronominals can be interpreted either deictically or anaphorically.

- (i) INFL can associate with substantive content other than *present* or *past*.
- (ii) *Present* or *past* marking may occur without associating with INFL.
- (iii) INFL may occur without any associated substantive content (in which case INFL must be valued in some other way).

2.4.1 INFL can associate with substantive content other than present or past

Above, we reviewed Ritter and Wiltschko's (2009) analysis of Halkomelem and Blackfoot according to which INFL associates with substantive content other than *present* or *past*. This confirms the first prediction on the basis of language variation: The abstract anchoring category INFL can be associated with different substantive content across languages. However, the abstract function is the same in each case: INFL introduces an abstract pronominal situation argument. In the absence of an appropriate antecedent (i.e., in matrix indicative clauses) this pronominal argument is interpreted deictically and we represent it as Utt-sit. In this case the coincidence feature in INFL relates the event argument (introduced in vP) to the utterance argument. Crucially, we do not identify tense as a privileged anchoring category; rather, temporal content is just one among several possibilities. The only restriction on the substantive content of INFL is that it be suitable for establishing a relationship between the event and the utterance. This predicts that any type of deictic content will be appropriate for valuing [*ucoin*] in INFL. And this is indeed what we find. The core deictic categories tense, location, and person can all serve this function.²⁴

The present analysis, therefore, allows us to understand variation in the categorial inventories of languages (Sapir's problem) within a universalist approach. It simultaneously captures the defining properties of the language-specific categories. For example, the contribution of locative auxiliaries in Halkomelem has been described in two ways by two different scholars:

"The choice between ?i and ni? depends on the **location of the speaker** relative to whatever the predicate refers to." Suttles (2004:35) [emphasis ours]²⁵

"The choice between í and lí is governed by considerations having to do with the **location of the event**. In particular, locative auxiliaries encode the 'semantic oppositions of emplacement ('here' ...) and displacement ('there' ...)'." (Galloway 1993:359) [emphasis ER and MW]

The analysis in (19)–(20) captures both of these descriptions: By virtue of associating with INFL, the locative content of the auxiliaries serves to relate the location of the event to the location of the speaker (i.e., the utterance location).

Our analysis also allows us to understand a comment made by one of our Blackfoot consultants. On several occasions she explained, "*He* is the past tense of *you*." We interpret her remark as follows: like past tense, 3rd person expresses non-coincidence between the utterance situation and the event situation. While past tense expresses

²⁴Deictic elements require reference to the extralinguistic context of the utterance for interpretation. They include time (e.g., *now* and *then*), place (e.g., *here* and *there*) and participants (e.g., *you*, *I*, and *them*) (see Fillmore 1975).

²⁵Suttles (2004) describes the Island dialect of Halkomelem in which the auxiliary *li* is pronounced as *ni*.

non-coincidence in time, 3rd person expresses non-coincidence in participants. Our treatment of 3rd person in (20) elegantly captures this insight. The non-local participant feature values the coincidence feature as [-coin], just like *past* does in a tense-based language.

2.4.2 *Present or past may occur without associating with INFL*

As for the second prediction, namely that we expect to find *present* or *past* marking which does not associate with INFL, we have already seen that this is indeed the case. In particular, we saw in (2) that there is a past marker in Halkomelem, but it is not obligatory and thus does not have one of the defining properties of contrastive marking. We propose that the past marker of Halkomelem does not associate with the functional head INFL but is instead a modifier that can combine with different categories, including verbs, nouns, prepositions, as well as auxiliaries (Wiltschko 2003). To motivate this analysis of the Halkomelem past marker, we use the diagnostics developed in Wiltschko (2008) to differentiate between heads and modifiers.

The first diagnostic concerns obligatoriness: heads are obligatory; modifiers are not. We have already seen that, in this respect, Halkomelem past marking behaves like a modifier.

Second, heads—because they are obligatory—are not always fully interpreted. That is, if a syntactic category is obligatorily present, then it will also be present even if it lacks semantic content.²⁶ Its presence will simply satisfy a syntactic requirement—but it will remain semantically vacuous. Expletive subjects are a well-known example of this phenomenon: in English, subjects are obligatorily present in indicative tensed clauses. If a given clause lacks a thematic argument that could occupy the subject position, an expletive subject is inserted, as in (21). The verb *seem* does not assign an external thematic role and no other argument serves to function as the subject of the clause. The pronoun *it* is inserted purely to satisfy the requirement that every clause have a subject.

(21) **It** seems that Konrad had fun.

This example involves a phrase that obligatorily occupies the specifier of IP, but the same logic applies equally to syntactic heads. For example Vergnaud and Zubizarreta (1992) argue that expletive determiners occur in languages in which determiners are obligatory. Consider the French example in (22). The definite determiner *la* preceding the inalienable noun *main* does not contribute to the semantic interpretation of the DP. Evidence for this comes from the fact that the DP is interpreted as plural even though the determiner appears in its singular form.

(22) Les enfants ont levé **la** main.
 DET.PL child-PL AUX raise DET.SG hand
 ‘The children raised their hands.’

²⁶Within the Minimalist program, this is formalized by means of an *EPP feature* (Chomsky 1998) or an *occurrence feature* (Chomsky 2005).

According to Vergnaud and Zubizarreta the determiner in examples like (22) is an expletive. We submit that the expletiveness of both the subject in (21) and the determiner in (22) is dependent on the obligatory occurrence of these linguistic objects. Another example of a linguistic object which is not semantically interpreted is the so-called *fake past* found in English counterfactuals (see Sect. 4.1.2 for discussion). To see this, consider the examples in (23). In the context of the conditional, the past tense marker co-occurs with an adverbial of present time (*now*). This differs from regular indicative clauses, where past tense cannot co-occur with an adverbial of present time.

- (23) a. If I had a car now. . . .
b. I had a car (*now).

The behavior of syntactic heads contrasts with that of modifiers in this respect. In particular, given the logic of the above argument, we expect that modifiers—because they are optional—must always be interpreted. In other words, there are no expletive modifiers (Wiltschko 2008). What is crucial for our purpose is that the Halkomelem past marker is always interpreted: there are no cases of fake or expletive past markers in Halkomelem (Wiltschko 2003).

The third piece of evidence that *present* and *past* need not associate with a syntactic head has to do with agreement. In particular, heads can trigger agreement; modifiers cannot.²⁷ If past marking in Halkomelem did function as a head it might trigger agreement. But what would agreement triggered by a tense marker look like? One possible candidate for agreement effects triggered by past marking is sequence of tense effects (henceforth SOT). It is a well-known fact about English, that when an embedded clause is selected by a [+past] matrix verb, the embedded INFL is specified as [+past], though its temporal reference need not be fixed prior to that of the matrix situation. Thus, in SOT contexts the embedded past verb agrees with the pastness of the matrix verb without requiring a shifted past interpretation. Note that this seems to be a purely morpho-syntactic requirement since modals behave in the same way, as illustrated in (24b). In other words, the morpho-syntactic past tense in the embedded clause does not need to be semantically interpreted as such. As exemplified in (25), a [+past] clause embedded under a [+past] matrix verb is ambiguous between a past tense (shifted) and non-past (simultaneous) reading:

- (24) a. John believed that Mary was a liar.
b. John believed that Mary might be a liar.
- (25) Mary said that she was tired. (Enç 1987:350 (18))
(i) Simultaneous reading: Time of being tired is at time of saying.
(ii) Shifted reading: Time of being tired is before time of saying.

To fully work out the syntax and semantics of SOT (and its equivalents in location- and person-based languages) within the theory of INFL developed here is beyond the

²⁷ This is not to say that modifiers cannot participate in agreement: modifiers often agree with the modifyee. However, it is not the case that modifiers can be the trigger of agreement.

scope of the current paper. There are, however, two points that are relevant for the present purpose.

First, the temporal interpretation of embedded clauses differs from that of indicative root clauses. We assume that this difference reduces to the availability of the utterance situation in SpecIP in indicative root clauses, but not in embedded clauses (cf. Enç 1987 among others). Thus, while tense marking in finite embedded clauses serves the same function as in matrix clauses (i.e., valuing $[ucoin]$ associated with INFL), the result differs. The embedded event argument is not ordered relative to the utterance, but rather to the matrix event argument. As mentioned above, we assume that INFL is always associated with an abstract pronominal situation argument. As a pronoun, it can be interpreted either deictically, i.e., with reference to the extra-linguistic context, or anaphorically, in which case it is dependent on another situation argument. The particular interpretation depends on the syntactic context. In root clauses, where no suitable antecedent is available, the pronominal situation argument is interpreted deictically and hence the temporal interpretation is anchored to the utterance. In contrast, in embedded clauses, the pronominal situation argument is anaphoric on the closest c-commanding situation argument, which is the event argument associated with the embedding predicate. Consequently, the embedded event is ordered relative to the matrix event argument.

- (26) a. $vp[Ev_i-sit\ V\ \text{IP}[Pro_i-sit\ INFL_{[+coin]}\ vp[Ev-sit\ V_{\{present\}}]]]$
 b. $vp[Ev_i-sit\ V\ \text{IP}[Pro_i-sit\ INFL_{[-coin]}\ vp[Ev-sit\ V_{\{past\}}]]]$

On this view, the pronominal character of tense (Partee 1973; Kratzer 1998) reduces to properties associated with the abstract situation argument associated with INFL (rather than to properties of tense marking itself).

Secondly, we return to the relevance of SOT effects for agreement. A common denominator of many analyses for the morpho-syntactic aspect of the SOT-effects is the assumption that its source is a dependency between the two T heads (cf. Stowell 1993, 1996; Adger 2003). If we assume that a dependency between two heads is a function of an agreement relation (i.e., AGREE), then we can use SOT effects to see whether the use of past marking triggers agreement. If past tense marking were modificational in Halkomelem, we would not expect to find morphological SOT effects. This expectation is borne out: there are no morphological SOT effects in Halkomelem (Ritter and Wiltschko 2004). For example, in (27) the matrix clause occurs with the past morpheme *-lh*, nevertheless the embedded clause need not be marked for past tense; and crucially, the embedded clause can still receive either a simultaneous or a shifted reading.

- (27) **Í-lh** **xét'e** the Mali...
 AUX-PAST say DET.F Mary...
 ...kw'-s-es syémyem kw's spelwá-lh
 ...COMP-NOM-3S pregnant DET year-PAST
 'Mary said that she was pregnant last year.'

- (i) Simultaneous reading: Time of being pregnant is at time of saying.
 (ii) Shifted reading: Time of being pregnant is before time of saying.

is unexpected on the view that the categorial identity of INFL is TENSE. How can there be TENSE without tense?²⁸

In the next two sections we explore the properties of the universal category INFL in clauses where it remains without substantive content. This allows us to study those properties of INFL that are independent of m-marking for tense, location or person. If the [ucoin] feature of INFL is not valued by m-marking, we expect other valuation strategies to emerge. In such contexts, we predict that languages might show similar valuation patterns even if their morphological valuation strategies are substantively different.

To sum up, the essence of our proposal is the decomposition of INFL into an unvalued coincidence feature [ucoin] and the substantive content that serves to value it. Those contexts in which INFL is not valued by m-marking allow us to explore the other valuation strategies languages use.

3 Embedded INFL without substantive content: infinitives and their kin

On the assumption that the core function of a functional category is independent of its content, we expect that function to be available even if the relevant m-marking is not. For example, in languages where INFL in indicative clauses is valued by temporal content, we expect to find tenseless INFL in some environments. This prediction is borne out. In English, as in many other Indo-European languages, infinitives obligatorily lack m-tense. In Sect. 3.1, we develop an analysis of English infinitives arguing that INFL's [ucoin] feature is valued by the embedding predicate. We refer to this as *predicate valuation*. In Sects. 3.2 and 3.3, we explore contexts of predicate valuation in Halkomelem and Blackfoot, respectively.

3.1 Predicate valuation in English infinitives

The obligatory absence of m-tense in English infinitives is illustrated in (29).

- (29) $IP[INFL \quad vP[V_{*}\{\text{past, present}\}]]$ ²⁹
- a. Yoshi wanted to play.
 - b. *Yoshi wanted to play-**ed**.

²⁸We note in passing that arguments for the view that the category INFL is in fact TENSE are largely based on the inflectional properties of matrix indicative clauses. Thus, it is not surprising that imperatives and embedded infinitives, which do not share these inflectional properties, pose problems for this view.

²⁹In English, a bare verb (*play* in (29)) is used for present tense and infinitives. Thus, we cannot distinguish verbs inflected for present tense and infinitives on purely morphological grounds. There are, however, other Indo-European languages that use a special form in the infinitive. German infinitives, for example, are suffixed by *-en* as in (i).

- (i) Yoshi möchte spiel-**en**.
Yoshi wants play-INF
'Yoshi wants to play.'
- (ii) Yoshi spiel-t.
Yoshi play-3rdSG.PRES
'Yoshi is playing.'

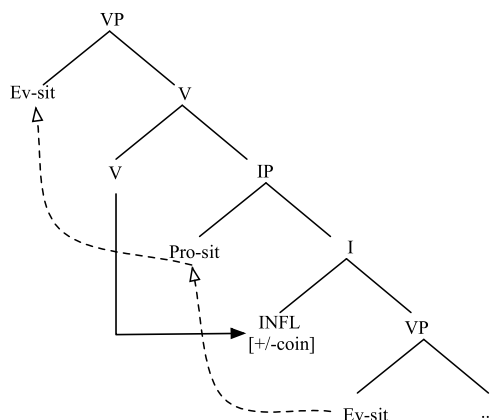
The tenselessness of INFL is not in itself surprising given the proposed dissociation of the category INFL from its substantive content. It does, however, still present us with some analytical challenges.

- (i) How is [*ucoin*] valued in the absence of m-marking?
- (ii) What serves as the anchor for the embedded event?

Recall that the anchoring function of INFL derives from its intrinsic coincidence feature [*ucoin*]. We propose that, in the absence of m-valuation, [*ucoin*] in an embedded infinitive is valued by the matrix predicate.

Next, recall that the deictic anchoring observed in matrix indicative clauses arises because the abstract pronominal situation argument (Pro-sit) in SpecIP is interpreted deictically in the absence of a proper antecedent. In embedded clause-types, such as infinitives, Pro-sit is no longer interpreted deictically (Enç 1987). Instead in this case Pro-sit is anaphorically linked to the closest c-commanding argument, which in this case is the event situation associated with the embedding predicate. Thus, the event denoted by the embedded predicate will be anchored to the event denoted by the matrix predicate rather than being deictically anchored. Predicate valuation is schematized in (30), where the dashed line arrows represent anchoring of one event situation to another while the solid arrow represents valuation of [*ucoin*].

(30) Predicate valuation



As should be clear from (30), our analysis predicts two types of embedded infinitives that differ in the value assigned to the coincidence feature of INFL. Moreover, the two types of infinitives should co-vary with the semantic content of the embedding predicate that serves to value this coincidence feature. This prediction is borne out. The relevant literature identifies two major classes of infinitives: (i) simultaneous infinitives and (ii) future irrealis infinitives.³⁰ We discuss each of them in turn.

³⁰We abstract away from bare VP infinitives, which lack an IP layer altogether. See Wurmbrand (2001) for a detailed discussion of different types of infinitives with various degrees of structural complexity.

Simultaneous infinitives are those embedded under aspectual verbs, such as *start* and *continue*. In this context, the embedding predicate picks out some portion of the embedded event, and as such, they refer to the same event. For example, in (31a), the embedding predicate specifies the start of the embedded dancing event. Evidence for this view comes from the observation that the two predicates cannot be modified by distinct temporal modifiers, as shown in (31c). In order to capture these facts, we propose that aspectual predicates value the formal feature of the embedded INFL as [+coin], as shown in (31d). In this context, this feature specification indicates that the embedded event coincides with the event denoted by the embedding predicate. In particular, the event of starting coincides with the event of dancing such that the inception of dancing occurs at the same time as the starting event.

- (31) a. Mika started to dance.
 b. $\text{Ev}(\text{start})$ coincides with $\text{Ev}(\text{dance})$.
 c. On Monday Mika started to dance (*on Tuesday).
 d. ... $\text{VP}[\text{Ev-sit start}] \text{ IP}[\text{Pro-sit INFL}_{[+\text{coin}]}] \text{ VP}[\text{Ev-sit dance}]$

The second major class of embedded infinitives, future irrealis infinitives, are embedded under future-oriented directive or desiderative verbs, such as *want* and *decide*. In this context, the embedding predicate picks out a distinct unrealized event.³¹ For example, in (32a) *want* selects an unrealized sleeping event. We propose that this class of embedding predicates values the embedded INFL as [-coin], and that this indicates that the embedded event is separate from the event denoted by the embedding predicate. As a result, the two events can both be modified by distinct temporal modifiers. This is shown in (32) below.

- (32) a. Konrad wanted to sleep.
 b. $\text{Ev}(\text{want})$ does not coincide with $\text{Ev}(\text{sleep})$.
 c. In the morning, Konrad wanted to sleep (in the afternoon).
 d. ... $\text{VP}[\text{Ev-sit want}] \text{ IP}[\text{Pro-sit I}_{[-\text{coin}]}] \text{ VP}[\text{Ev-sit sleep}]$

Note that assertion of non-coincidence by itself would not imply the future interpretation of the embedded predicate. In fact, we saw in Sect. 2 that in the context of indicative matrix clauses, the non-coinciding event situation is interpreted as having occurred in the past. (See also Footnote 31.) This suggests that it is the semantic content of the valuing element that is responsible for the specific interpretation. When *past* morphology values INFL as [-coin], the event situation is interpreted as having occurred in the past; when a directive or desider-

³¹Note that the complement of *want* must be unrealized, but need not be scheduled subsequent to the matrix event, as shown in (i) below. In this example, the presence of a progressive auxiliary permits a reading where what is desired is an unrealized event occurring at the same time as the matrix event.

(i) At noon, Konrad wanted to be sleeping (instead of working).

That the progressive auxiliary does not force this interpretation is shown by (ii) where the addition of the temporal adverb results in an interpretation where the embedded event follows the matrix.

(ii) At noon, Konrad said that he wanted to be sleeping at midnight.

ative verb values INFL as [-coin], the event situation is interpreted as a future (and irrealis) event. This converges with claims found in the literature according to which the semantics of the predicate determines the temporal interpretation of the embedded clause (Ogihara 1996; Katz 2001, 2004; Abusch 2004; Bittner 2005). Thus, the assumption that INFL is not to be equated with tense can successfully account for the observed temporal contrast in the two types of infinitives.

Our analysis departs from previous ones according to which infinitives are tensed. It is precisely the temporal contrast just discussed which has led several researchers to conclude that infinitives are tensed, despite the absence of m-tense (Stowell 1982; Pesetsky 1992; Bošković 1996, 1997; Martin 1996, 2001; Landau 2000, 2004; Wurmbrand 2001; Pesetsky and Torrego 2004). These analyses all share the assumption that TENSE is the head of the clause. On this assumption, it would in fact be surprising to find untensed clause-types in the first place. That is, if the head of the clause were equated with TENSE then we should expect TENSE to be present in all clause-types. The very existence of the temporal contrast just discussed is thus a welcome result, but accounting for it is still not straightforward.

Consider for example Landau's (2004) analysis of infinitives. He proposes that the temporal contrast associated with the two types of infinitives reflects the feature value of the category TENSE itself. Simultaneous infinitives are specified as [-Tense] and future irrealis ones are [+Tense] (Landau 2004:838).

- (33) a. IP[... [-Tense] VP[....V....]] → simultaneous
 b. IP[... [+Tense] VP[....V....]] → future irrealis

There are several problems with this account, however. First, there is no principled reason as to why [-Tense] should correspond to the simultaneous interpretation, while [+Tense] should correspond to the future irrealis interpretation. As Landau (2004:838) notes, this is a matter of convenience lacking principled motivation.

Second, everything else being equal, we might expect the feature specification [+Tense] vs. [-Tense] to correlate with the presence and absence of m-tense, respectively. This is, however, not the case: Neither of these constructions is marked for m-tense. Thus, the absence of m-tense in infinitives appears to be accidental. On our account, however, the absence of m-tense that serves to value INFL is a necessary prerequisite for the possibility of predicate valuation.³²

Third, even if the assumption that infinitives are tensed leads us to expect a temporal contrast, the nature of the contrast found in infinitives is unexpected. While tensed INFL in indicative clauses gives rise to a *present/past* contrast, in infinitives we observe a *simultaneous/future* contrast. Crucially, on our analysis, the temporal contrast that characterizes the two types of infinitives does not require INFL to be

³²Though, as the existence of fake past marking indicates, tense morphology is not a sufficient condition for m-valuation (see Sects. 3.2.2 and 4.1.2 for discussion).

specified for tense features. The apparent temporality derives from the coincidence feature associated with INFL in combination with the semantic content of the valuing predicate. That is, temporal ordering can come about in two ways: (i) directly via the ordering of explicitly temporal arguments; and (ii) indirectly via the ordering of situation arguments, which may result in sequencing effects. We might therefore expect that tenseless languages would display a similar sequencing contrast in embedded clauses that lack m-marking. In what follows we show that this is indeed the case.

3.2 Predicate valuation and sequencing in Halkomelem

The absence of m-tense is one of the defining characteristics of infinitives in English. It cannot, however, serve as a diagnostic for predicate valuation in tenseless languages. As we have seen in Sect. 2, tenseless languages are characterized by the general absence of contrastive m-tense across all clause-types—even indicative clauses. Instead, in the context of deictic anchoring, the m-marker, which serves to value INFL, has substantive content other than tense.

Our analysis thus far leads us to expect that we may find embedded clauses where locative m-marking is absent in Halkomelem. That is, we need to explore whether there are clauses in Halkomelem that obligatorily lack locative auxiliaries. In the absence of m-marking we may expect to find that some of these are instances of predicate valuation. Furthermore, we may expect sequencing effects that depend on the semantics of the valuing predicate. We now show, based on the properties of clausal complements embedded under aspectual and future-oriented predicates, that these predictions are indeed borne out.

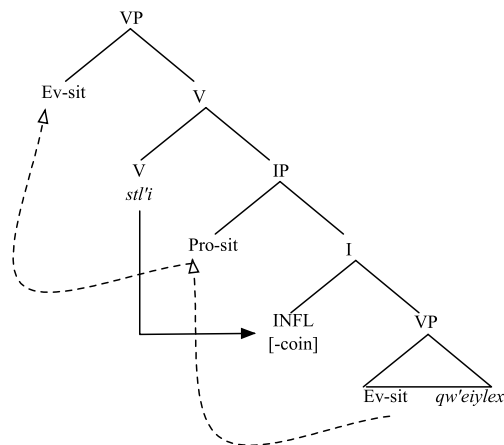
3.2.1 *Complements of future-oriented predicates*

With the exception of conditional clauses, all embedded clauses in Halkomelem are nominalized (Galloway 1993; Thompson 2012). Roughly, nominalization manifests itself in three different kinds of morphological marking: the presence of a nominalizing affix (-s), a determiner preceding the nominalized constituent, and possessive agreement instead of subject agreement. For example, in (34) the embedding predicate *stl'i* ‘want’, is followed by a nominalized clause.

- (34) *l-stl'i* [**kw-el-s** *qw'eyflex* (*wáy:eles*)]
 1SG.POSS-want DET-1SG.POSS-NOM dance (tomorrow)
 ‘I want to dance tomorrow.’

We suggest that the Halkomelem sentence in (34) instantiates predicate valuation: *Stl'i* ‘want’ is a desiderative predicate and the embedded event of dancing is future-oriented relative to the matrix event, and may in fact never occur. Thus, the nominalized clause fits the semantic characteristics of a future irrealis infinitive. Let us hypothesize that (34) does indeed instantiate a context of predicate valuation such that INFL of the embedded clause is valued as [-coin] by the matrix predicate, as shown in (35).

(35) Predicate valuation in Halkomelem



This analysis correctly predicts that locative auxiliaries will be ruled out in such environments. As illustrated in (36), the presence of a locative auxiliary, while not ungrammatical, is incompatible with a future-oriented or irrealis interpretation of the embedded clause. Rather, in the presence of the locative auxiliary a different valuation strategy for the embedded INFL is obtained. If we are correct in assuming that locative marking in Halkomelem values INFL, then it is the locative auxiliary itself that values INFL in this context.³³

- (36) l-stl'i kw-el-s **li** qw'eyflex
 1 SG.POSS-want DET-1 SG.POSS-NOM AUX dance
 *‘I want to dance.’
 ✓ ‘I like it when I used to dance.’³⁴

In other words, (36) is comparable to an embedded finite clause in English, such as (37). Here, too, the embedded INFL is valued by m-marking.

³³The observed past interpretation can be analyzed as a by-product of spatial anchoring: if the speaker, who is necessarily at the utterance location, describes an event in which s/he is a participant that takes place elsewhere, then the reported event must also be at a different time from the utterance. This follows from the fact that a given individual cannot be in two places at the same time. In Halkomelem, this gives rise to a past time interpretation of the event denoted by the predicate.

³⁴One may ask why **I want to danced* is ungrammatical in English, instead of meaning ‘I like it when I danced,’ as it does in Halkomelem. We suggest that this has to do with the fact that the Halkomelem verb is ambiguous. It means either ‘want’—a future oriented predicate—or ‘like’, which is not future oriented. In contrast, English *want* is only future oriented. As the translation in (36) indicates, the non-future oriented interpretation of *stl'i* is rendered as *like* in English, a predicate which is compatible with a past interpretation in the embedded clause (cf. *One of the things that I like about myself is that I danced in the Nutcracker as a child*). Accordingly, when the Halkomelem predicate *stl'i* means ‘like’ it is compatible with m-valuation in the embedded clause; but when the *stl'i* means ‘want’ only predicate valuation is possible, just as with English *want*.

Furthermore, we submit that there is a principled reason why we do not find fake past embedded under future-oriented predicates in *any* language: fake past makes a contribution to semantic interpretation, and this contribution is incompatible with future-oriented predicates (see Iatridou 2000, and Sect. 4.1.2 of the present paper for some discussion).

(37) I like that I danced at the party.

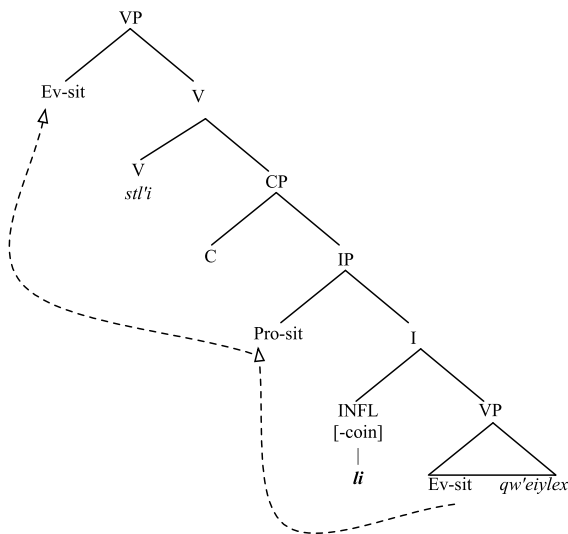
Thus, finite clauses (both root and embedded) have in common that they are valued via m-marking. They differ in whether or not there is an appropriate antecedent available for the Pro-sit in SpecIP. In root clauses there is not, resulting in a deictic construal; in embedded clauses there is, resulting in an anaphoric relation between the event situation of the matrix predicate and the pronominal situation in SpecIP. This is summarized in Table 1.

Table 1 Root vs. embedded clauses

	Valuation-strategy	Antecedent for Pro-sit
Finite root clause	m-marking	n/a (deictic construal)
Embedded finite clause	m-marking	Ev-sit of embedding predicate
Embedded non-finite clause	predicate valuation	Ev-sit of embedding predicate

The representation of an embedded finite clause is given in (38).

(38) M-valuation in embedded finite clauses



A comparison of matrix clauses with a locative auxiliary and embedded nominalized clauses without a locative auxiliary reveals that the extent of the attested morpho-syntactic difference that correlates with m-valuation on the one hand, and predicate valuation on the other, is much smaller than in English. As is well known, the absence of m-tense in English infinitives correlates with absence of subject-verb agreement and normally also with the absence of overt DP subjects.³⁵ However, no such con-

³⁵Raising to object/Exceptional Case Marking contexts such as (i) constitute an exception to the generalization that English infinitives lack an overt DP subject.

(i) I want Bill/him to dance now.

interpreted as future irrealis (as in (40) above), while subjunctives embedded under aspectual verbs receive a simultaneous interpretation.³⁷ This contrast, familiar from English-type infinitives, is illustrated in (41) on the basis of Greek. The simultaneity of subjunctives embedded under aspectual verbs can again be observed on the basis of the unacceptability of temporal modification of the embedded event.

- (41) a. tora, o Yanis elpizi/theli na figi avrio Greek
 now, DET John hopes/wants PRT leave.3SG.tomorrow
 ‘Now, John hopes/wants to leave tomorrow.’
 b. tora, o Yanis kseri/axizi na komibai (*avrio).
 now, DET John knows.how/begins PRT swim.3SG tomorrow
 ‘Now John knows how/begins to swim (*tomorrow).’
(Varlokosta 1993:(43), (44), (46))

We have now established that predicate valuation is not instantiated by the same type of clause across all languages. While in many Indo-European languages predicate valuation manifests itself in the form of infinitives, in the Balkan languages it does so in the form of subjunctives. This means that the valuation strategy of INFL cannot be determined by examining the morpho-syntactic characteristics of the clause-type alone. The property that characterizes all cases of predicate valuation is the absence of m-marking (for tense, location, etc.) within the clause.³⁸ However, there is significant variability with respect to the availability of overt subjects and subject-verb agreement. Halkomelem predicate valuation occurs in clauses that have morpho-syntactic properties similar to those found in Balkan subjunctives, and unlike English infinitives. Thus far, however, we have only investigated the properties of clauses embedded under desiderative verbs in Halkomelem, i.e., clauses where INFL is valued as [-coin]. In the next subsection we show that there are also Halkomelem embedding predicates that value INFL as [+coin].

3.2.2 Complements embedded under aspectual verbs

In this section we focus on clauses embedded under aspectual verbs such *iyóthet* ‘start’ and *try*-class verbs such as *t’át* ‘try’, illustrated in (42). As is the case with clauses embedded under desiderative verbs, the embedded clause is again nominalized in this context.

- (42) a. tsel iyó-thet kw’-el-s xwemxál-em
 1SGS start-REFL³⁹ DET-1SG.POSS-NOM run-INTR
 ‘I just started running.’

³⁷ Landau (2004) further identifies differences in control as a relevant diagnostic to distinguish the two types. While future irrealis infinitives and subjunctives allow for partial control, simultaneous infinitives and subjunctives require exhaustive control.

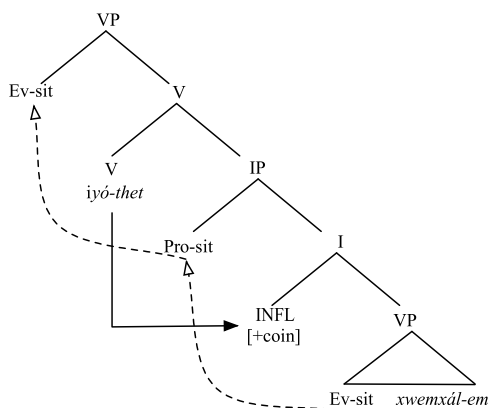
³⁸ Fake marking, discussed in Sect. 3.2.2, constitutes an exception to this characterization of predicate valuation.

³⁹ The Halkomelem verb for *start* is lexically marked as reflexive.

- b. tsel t'át kw'-el-s xwemxál-em
 1SGS try DET-1SG.POSS-NOM run-INTR
 'I tried to run.'

However, the temporal sequencing of events in the context of an aspectual or *try*-class matrix predicate differs from the temporal sequencing in the context of a desiderative predicate. In examples such as (42), the embedded event is interpreted as coincident with the event denoted by the matrix predicate. On our analysis, the simultaneity derives from the valuation of the embedded INFL as [+coin] by the matrix predicate, as schematized in (43).

- (43) Predicate valuation under aspectual verbs in Halkomelem



Embedded nominalized clauses in Halkomelem fall into two major classes, depending on the semantic properties of the embedding predicate, just like English infinitives and Balkan subjunctives. On our analysis, the temporal contrast derives from the anchoring function of INFL: anchoring the embedded INFL to the higher predicate results in the sequencing of the embedded event relative to the higher event.

If this analysis is on the right track, we predict that *m*-location in the form of locative auxiliaries should again be ungrammatical. This prediction is only partly borne out, however. As predicted, the distal locative auxiliary *li* is indeed ungrammatical in this context, as shown in (44).

- (44) a. *tsel iyó-thet kw'-el-s **lí** xwemxál-em
 1SGS start-REFL DET-1SG.POSS-NOM AUX run-INTR
 b. *tsel t'át kw'-el-s **lí** xwemxál-em
 1SGS try-TR DET-1SG.POSS-NOM AUX run-INTR

The ungrammaticality of (44) can be explained on the assumption that *m*-valuation is ruled out in the context of predicate valuation. As a consequence, *m*-marking is impossible. We assume that predicate valuation is a reflex of a selectional restriction imposed by the embedding predicate.⁴⁰ The proximate auxiliary *i*, however, behaves

⁴⁰Reasonably, the problem with examples such as (44) is that a selectional property of the embedding predicate is not satisfied; i.e., aspectual and *try*-class verbs require a complement with an unvalued INFL

unexpectedly. As illustrated in (45), it may occur in clauses embedded under *try*-class verbs (Thompson 2008).

- (45) a. tsel t'á-t kw'-el-s lép-ex
 1SGS try-TR DET-1SG.POSS-NOM eat-TR
 'I tried to eat it.'
- b. tsel t'á-t kw'-el-s í-lh lép-ex
 1SGS try-TR DET-1SG.POSS-NOM AUX-PAST eat-TR
 'I tried to eat it before.'

Why would this be? We propose that the proximate auxiliary is possible because of its formal feature content, though it lacks spatial force in this context. As such, it is reminiscent of subjunctive embedded clauses of the Romance type, where subjunctive is an integral part of verbal morphology, and its form depends in part on its m-tense content.⁴¹ Consider the Italian example in (46) below.

- (46) a. Gianni crede che Maria sia/*fosse incinta.
 Gianni believes that Maria be.PRES.SUBJ/*be.PAST.SUBJ pregnant.
 'Gianni believes that Maria is pregnant.'
- b. Gianni credeva che Maria fosse/*sia incinta.
 Gianni believed that Maria be.PAST.SUBJ/*be.PRES.SUBJ pregnant.
 'Gianni believed that Maria was pregnant.' (Giorgi 2009:(14)–(15))

The tense in the embedded subjunctive clause must be the same as that of the embedding indicative clause. This dependency suggests that subjunctive morphology in this case is a form of *temporal agreement* rather than encoding a temporal relation between the two events (see Giorgi 2009). In other words, tense marking in a subjunctive clause lacks temporal force. Let us refer to this as *fake m-tense*.

We propose that the proximate auxiliaries in complements embedded under aspectual verbs are *fake m-location*. They fail to value INFL but they nevertheless have to be compatible with its value. This explains the ban against distal auxiliaries in the complement of aspectual and *try*-class predicates. From indicative clauses, we know that proximate auxiliaries value INFL as [+coin] while distal auxiliaries value INFL as [-coin]. Thus, proximate auxiliaries can be used as fake m-location if they are embedded under an aspectual or *try*-class verb, which values its complement as [+coin], but distal auxiliaries cannot.⁴²

in order to signal the temporal dependency relationship between them. Note that if the problem were simply a matter of valuation, proceeding in a bottom-up fashion, we would expect a closer anchor to be preferred over one that is farther away from the target (e.g., INFL vs. embedding predicate).

⁴¹This differs from the subjunctive of the Balkan type discussed above, where the subjunctive is marked by an uninflected particle.

⁴²This raises the question as to why *li* cannot be used as a fake location marker in complements of predicates that value embedded INFL as [-coin]. We have nothing insightful to say about this gap. Note, however, that this kind of polysemy is not uncommon (i.e., where one item is used in two distinct environments with different but related semantic properties, and a contrasting item occurs in only one of those environments). Take for example the English demonstrative/complementizer polysemy. While both *this* and *that* can be used as demonstratives, only *that* can be used as a complementizer. (See Kayne 2014 for an analysis of this gap.)

Table 2 The distribution of m-marking

m-marking	m-marking values INFL	Example
✓	✓	Indicative matrix clauses
✓	✗	Subjunctive complements (Romance type)
✗	✓	n/a
✗	✗	Infinitives

The existence of *fake* m-marking implies that we cannot take the absence of m-marking as a necessary or sufficient condition for predicate valuation. While the presence of m-marking may be a necessary condition for m-valuation, we have just seen that the absence of m-marking is not a necessary condition for predicate valuation. However, the absence of deictic force usually associated with m-marking *is* a necessary condition. This means that in the context of predicate valuation we expect either no m-marking or fake m-marking. This is summarized in Table 2.

3.3 Blackfoot lacks predicate valuation and sequencing

So far we have seen that in contexts of predicate valuation, Halkomelem and English are remarkably similar. In both cases the semantic content of the matrix predicate serves to value embedded INFL, thereby giving rise to a sequencing effect. The embedded event situation is asserted to either coincide or not coincide with the matrix event situation.

In this subsection, we turn to potential contexts of predicate valuation in Blackfoot, but our investigation indicates that predicate valuation is not available in this language. In particular, we show that complements of aspectual and *try*-class verbs are realized as bare VPs (i.e., restructuring infinitives) while complements of future-oriented verbs obligatorily require an irrealis marker.

3.3.1 Complements of aspectual verbs

Aspectual and *try*-class verbs (corresponding to English *start* and *try*) are typically realized as verbal prefixes (called *preverbs* in the Algonquianist tradition). Consider the examples in (47):

- (47) a. *Ikómatapihpiyiwa*
 iik-**omatap**-ihpiyi-wa
 INT-**start**-dance.AI-PROX
 ‘S/he started to dance.’ (Blackfoot Language Database⁴³ 17262)
- b. *Nitsssáaksoyi*
 nit-**sssaak**-ioyi
 1-**try**-eat.AI
 ‘I tried to eat.’ (adapted from Frantz and Russell 1995:220)

⁴³<http://www.ubcblackfoot.com/>.

The preverb merges with the main verb to form a complex predicate. While existing analyses of Algonquian preverbs differ as to how these elements are integrated into the clause, they all share the assumption that preverbs are merged in the same minimal clause as the main predicate (Brittain 2001; Cook 2003a, 2003b; Slavin 2006; Valentine 2001). As a consequence, preverbs occur immediately adjacent to the verb stem with no intervening functional material. For our purposes, it does not matter whether the preverb is analyzed as a modifying adverb, part of a compound lexical verb, or as a functional head located between V and COMP. Importantly, these are mono-clausal structures, so there is no embedded INFL to be valued by the preverb. This establishes that Blackfoot lacks the clause-type formally equivalent to simultaneous infinitives: there is thus no possible candidate for a clause type that would instantiate predicate valuation of INFL as [+coin].

3.3.2 Complements of future-oriented verbs

In Blackfoot, verbs in embedded clauses normally belong to a paradigm called the CONJUNCT ORDER in the Algonquianist tradition.⁴⁴ Verbs of this paradigm are morphologically marked by the invariant suffix *-hsi*, which appears immediately before number agreement suffixes.⁴⁵ This is true for complements embedded under future-oriented verbs (48), for complements of verbs of saying and epistemic verbs (49), as well as for various adjunct clauses (50).

- (48) a. *Nitsíkssta nááhksoyssi.*
nit-iik-sstaa n-aahk-ioyi-hsi
1-INT-want.AI 1-NONFACT-eat.AI-CONJ
'I want to eat.'
- b. *Nitáánistawa omááhkotoyaaksstsiiyssi.*
nit-waanist-a-wa om-aahk-oto-yaakihtsiyi-hsi
1-say.TA-DIR-PROX 3-NONFACT-go-go.to.bed-CONJ
'I told him to go to bed.'
- (49) a. *Nitsikáánistsiksimssta nitsístsikohsi.*
nit-iik-aanist-iksimsstaa nit-sistsiko-hsi
1-INT-MANNER-think.AI 1-tire.AI-CONJ
'I think I am tired.'
- b. *Áániiwa otáístsikohsi.*
waanii-wa ot-a-sistsiko-hsi
say.AI-PROX 3-IMPf-tire.AI-CONJ
'He said he was tired now.'
(They were working, and he said he's tired.)
- (50) *Nomohtó'too kááhksspommookssoaayi.*
n-omoht-o'too k-aahk-sspommo-oki-hs-oaa-yi
1-SOURCE-arrive.AI 2-NONFACT-help.TA-2:1-CONJ-2PL-CONJ
'I came for you_{2PL} to help me.' (adapted from Frantz 1991:111 (1b))

⁴⁴Frantz (1991) uses the term conjunctive order to indicate that the Blackfoot paradigm differs in some respects from counterparts in other Algonquian languages.

⁴⁵We discuss this suffix in more detail in Sect. 3.3.3.

The clauses embedded under directive and desiderative predicates in (48) are interpreted as future irrealis. In Blackfoot, this cannot be attributed to predicate valuation because the predicate alone does not suffice to trigger this interpretation. Instead, such complements obligatorily require a specialized irrealis marker (*aahk-*). If the matrix predicate were to value INFL as [-coin] we would not expect such marking to be necessary. Recall that no such marking is required in either English or Halkomelem. Note for completeness that this irrealis marker is not restricted to embedded clauses. It is also found in deictically anchored matrix clauses, as illustrated below.

- (51) *Kikááhkaikaohkanaoowataa.*
 kit-aahk-ikaa-ohkana-oowat-a-wa
 2-NONFACT-PERF-all-eat.TA-DIR-PROX
 ‘You probably ate the whole thing.’
 (adapted from Bullshields et al. 2008:(48))

We conclude that Blackfoot does not make use of predicate valuation. Since the predicate cannot value embedded INFL, sequencing cannot come about in this way. Instead, other strategies must be employed. Where English uses simultaneous infinitives, Blackfoot uses preverbs, which derive complex predicates denoting a single event. Where English uses future irrealis infinitives, Blackfoot uses a dependent clause with a conjunct order verb containing a dedicated irrealis marker. But if the predicate in (48)–(50) does not value INFL, what else does? And what is the embedded event anchored to? We turn to this question in the next subsection.

3.3.3 What the absence of predicate valuation tells us about anchoring in Blackfoot

We have just seen that Blackfoot does not have a clause-type dedicated to predicate valuation; i.e., there is nothing equivalent to English infinitives or Balkan subjunctives in the language. There is, however, a dedicated dependent clause-type, marked by the conjunctive order suffix (*-hsi*). We propose that the conjunct marker is associated with INFL (see also Déchaine and Wiltschko 2010), and that it values the coincidence feature as [+coin]. Evidence for its association with INFL comes from the fact that it is in complementary distribution with the suffixes that occupy INFL in independent clauses (i.e., m-participant marking). Recall that in independent clauses, INFL suffixes serve to value [ucoin] by virtue of their substantive content: the local suffix *-hp* values INFL as [+coin] while the non-local suffix (zero marking or *-m*) values it as [-coin]. In contrast to the independent suffixes, conjunct suffixes are insensitive to person, as shown in Table 3.

No substantive content appears to be associated with *-hsi*. This indicates that valuation may be purely formal in this case: *-hsi* merely marks INFL as [+coin].⁴⁶

⁴⁶We use the term *substantive content* to refer to any independent content that serves to value [ucoin]. We have seen that substantive content takes the form of grammatical features, such as [±past] or [±local] in the case of m-valuation, and that it takes the form of encyclopedic content in the case of predicate valuation. Thus, the characterization of *-hsi* as lacking substantive content simply means that it has no content other than [+coin]. See Wiltschko (2014) for the development of a formal typology of valuation.

Table 3 INFL marking in Blackfoot

Actor	Independent	Conjunct
1st	-hp	-hsi
2nd	-hp	-hsi
3 proximate	-m	-hsi
3 obviative	-m	-hsi

Conjunct clauses in Blackfoot are thus similar to infinitives and subjunctives: their INFL remains without substantive content. They differ, however, from infinitives and subjunctives in that [+coin] does not give rise to a sequencing effect, but rather to an *atemporal* dependency relation. Evidence that -hsi does indeed establish a syntactic dependency relation stems from the fact that it is associated with a strict ordering requirement: a conjunct clause must follow the clause it is dependent on.⁴⁷ If the order of the two clauses in (48)–(50) is reversed, the result is ungrammatical, as shown below.⁴⁸

- (52) a. **Nááhksoyssi* *nitsíkssta.*
n-aahk-ioyi-hsi nit-iik-sstaa
1-NONFACT-eat.AI-CONJ 1-INT-want.AI
intended: 'I want to eat.'
- b. **Omááhkotoyaaksstsiiyssi* *nitáánistawa.*
om-aahk-oto-yaakihtsiiyi-hsi nit-waanist-a-wa
3-NONFACT-go-go.to.bed.AI-CONJ 1-say.TA-DIR-PROX
intended: 'I told him to go to bed.'
- (53) a. **Nitsístsikohsi* *nitsikáánistsiksimssta.*
nit-sistsiko-hsi nit-iik-aanist-iksimsstaa
1-tire.AI-CONJ 1-INT-MANNER-think.AI
intended: 'I think I am tired.'
- b. **Otáístsikohsi* *áániwa.*
ot-a-sistsiko-hsi waanii-wa
3-IMPF-tire.AI-CONJ say.AI-PROX
intended: 'He said he was tired now.'
- (54) **Kááhksspommookssoaayi* *nomohtó'too.*
k-aahk-sspommo-oki-hs-oaa-yi n-omoht-o'too
2-NONFACT-help.TA-2:1-CONJ-2PL-yi 1-SOURCE-arrive.AI
intended: 'I came for you_{2PL} to help me.'

Thus, -hsi values INFL as [+coin], marking a dependency, but we still need to know what INFL is dependent on. With this question in mind, consider again the examples in (48)–(50). The embedded clause provides the *content* of the propositional attitude in (48), and the *content* of what is being said in (49). This suggests that the conjunct

⁴⁷On the relevance of linear precedence for syntactic dependencies see Williams (1997).

⁴⁸Bliss (2013) finds that this generalization is only true if the dependent clause is irrealis. We will have to leave the exact nature of the generalization as well as its analysis for future research.

clause is anchored to an argument of the verb and that it relates a proposition, rather than an event situation. This differs from infinitives and subjunctives of the Indo-European type, which encode the anchoring relationship between the event situation associated with the embedding verb and the event situation of the embedded predicate. This conclusion is supported by the fact that purpose clauses as well as other adjunct type clauses must be licensed by the dedicated verbal prefix (*omoht* in (50), repeated here as (55)) which encodes the type of relation (SOURCE).

- (55) *Nomohtó'too kááhksspommookssoaayi.*
 n-**omoht**-o'too k-aahk-sspommo-oki-hs-oaa-CONJ
 1-SOURCE-arrive.AI 2-NONFACT-help.TA-2:1-CONJ-2PL-yi
 'I came for you_{2PL} to help me.' (adapted from Frantz 1991:111 (1b))

In sum, we have seen that Blackfoot differs significantly from English and Halkomelem: it lacks predicate valuation, and anchoring of the embedded event is not relative to the matrix event, but instead to an argument or adjunct associated with the embedding predicate.⁴⁹

3.4 Summary

The main goal of this paper is to argue for the dissociation of the functional category INFL from its substantive content. This dissociation predicts that INFL may in some contexts remain without substantive content. In this section we have explored the properties of embedded INFL without substantive content. The fact that English embedded infinitives differ in their temporal interpretation (*simultaneous* and *future irrealis*) derives from the fact that INFL is intrinsically associated with an unvalued feature [*ucoin*]. In the absence of substantive content in the form of m-marking, INFL requires another valuing element. Based on the fact that the semantic content of the embedding predicate determines the interpretation of the infinitival complement, we have argued that in the absence of m-valuation, the embedding predicate serves to value INFL as [+coin] or [-coin].⁵⁰ The former asserts that the matrix and the embedded events coincide, and the latter asserts that they do not. Thus, in embedded clauses the anchoring function of INFL derives a sequencing effect even in the absence of explicit temporal content. We have further seen that predicate valuation maps onto different types of clauses in different languages: clauses that are realized as infinitives in English are realized as verbal subjunctives in Romance languages, as particle subjunctives in Balkan languages, and as nominalized clauses in Halkomelem.

⁴⁹It remains to be seen whether there is a principled way to determine whether or not a given language makes use of predicate valuation. At the moment we do not have an answer to this question. All we can say at this point is that it does not appear to be tied to the type of content associated with INFL, but rather to the (un-)availability of non-finite embedded clauses.

⁵⁰More specifically, in the case of predicate valuation, it is the encyclopedic content of the matrix verb that values INFL. Our assumption is that the encyclopedic content is included in the syntactic structure, and therefore is accessible to the computation. In the case of predicate valuation it is not only accessible but also accessed.

Finally, the exploration of embedded clauses in Blackfoot has revealed another valuation strategy for INFL without substantive content. The conjunct order suffix values INFL as [+coin] in the absence of substantive content. Since there is no substantive content associated with INFL whatsoever, the anchoring function in this case derives a dependency relation.

If a higher head is able to value INFL, the question arises as to whether other heads besides the embedding predicate can serve the same function. For example, given the close connection between INFL and COMP (cf. Pesetsky and Torrego 2001), we might expect that COMP could also serve to value INFL. In the next section we explore this option, and suggest that it leads to some promising results for the analysis of two types of tenseless clauses: imperatives and counterfactuals.

4 When INFL is valued by COMP: imperatives and counterfactuals

In this section we explore the properties of INFL without substantive content in two other clause-types: imperatives and counterfactuals. We argue that INFL is not valued via m-valuation or predicate valuation in either one. Instead, we propose that in such contexts COMP serves to value the coincidence feature intrinsic to INFL.⁵¹ More specifically, we argue that the directive content in imperative COMP values INFL as [+coin] whereas counterfactuality, a property of COMP in counterfactual clauses, values INFL as [-coin]. We refer to this as COMP-valuation.

4.1 COMP-valuation in tense-based languages

English imperatives obligatorily lack m-tense; as such, they satisfy the characterization of tenseless clauses. English counterfactuals, however, appear to have m-tense. Nevertheless, there is evidence that they are also tenseless, since their m-tense lacks temporal force. We consider each of these clause-types in turn.

4.1.1 Imperatives

It is a well-known fact that in English—and other tense-based languages—imperatives are characterized by INFL without m-tense. The obligatory absence of m-tense is evidenced by the fact that a bare form of the verb is required. We demonstrate this with the copula which, unlike other English verbs, has morphologically distinct present tense and bare forms. As shown in (56) only the bare form *be* is possible in imperatives.

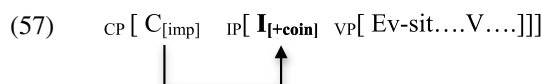
- (56) a. (You) be quiet!
b. *{Are/will be/was} quiet!

The absence of m-tense, however, does not imply the absence of the head that otherwise hosts tense, i.e., INFL (contra Zanuttini 1994). In particular, the possibility for

⁵¹We use the term COMP here as a cover term. We are agnostic as to whether we are dealing with single head or a series of heads in the left periphery of the clause, as in Rizzi (1997).

an overt subject as in (56a) indicates the presence of SpecIP and thus the presence of INFL in imperatives.⁵² The presence of structure in the absence of an overt realization is consistent with our claim that there is a universal spine that is independent of the presence of overt material.

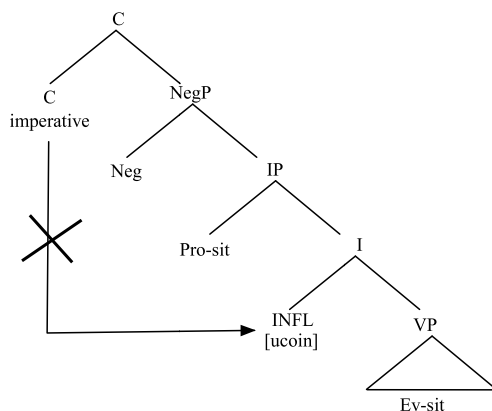
While on our account the availability of tenseless INFL is expected, it still raises the question as to how its intrinsic coincidence feature is valued. We propose that the imperative force associated with COMP values INFL as [+coin], as illustrated in (57) (cf. Rivero 1994; Rivero and Terzi 1995; Zanuttini 1997; Han 2000).



Thus, imperatives are like infinitives in that a higher head values INFL in such clauses. However, they differ in the choice of the higher head: while tenseless INFL in infinitives is valued by the semantic content of a higher lexical predicate, tenseless INFL in imperatives is valued by the semantic content of a higher functional head.

Our proposal that COMP values INFL is supported by intervention effects of the familiar kind. That is, in the presence of a functional head between COMP and INFL, such as negation, we expect COMP-valuation to be impossible, as schematized in (58).

(58) Negation blocks C-valuation



⁵²Further evidence that INFL is present in English imperatives may be gleaned from the observation that tag questions may be added to clauses of this type. As illustrated below, the tag on an imperative consists of a pronominal copy of the subject and the modal auxiliary *will*, *would* or *won't*.

- (i)
- a. Take a seat, won't you?
 - b. Don't forget, will you?
 - c. Help me, would you?

Assuming that modals are in INFL, the presence of a modal in the tag suggests that there is also INFL in the imperative source.

This prediction is indeed borne out. In many languages, including Greek, dedicated imperatives are incompatible with negation, as shown in (59) (see Bošković 2004).

- (59) a. Diavase
read.IMP
'Read!'
b. *Den/mi diavase
NEG read.IMP
'Don't read!' (Bošković 2004:270 (1))

In languages where negation is a functional head below IP, negation blocks m-valuation from V (as in English, where this results in *do*-support), whereas in languages where negation is above IP it blocks COMP-valuation (see Miyoshi 2002; Bošković 2004). Interestingly, negative commands are expressed with negative subjunctives or infinitives across many languages (Joseph and Philippaki-Warbuton 1987; Laka 1994; Zanuttini 1991, 1994, 1997; Rivero 1994; Rivero and Terzi 1995; Han 2000, 2001; Tomić 2001).⁵³ On our analysis these constructions form a natural class with imperatives. They are all defined by the absence of m-valuation.

But what is the event situation asserted to coincide with in the case of imperatives? According to Han (2001:306):

"By performing a directive action, the speaker instructs the hearer to update a particular module, which [she] call[s] the plan set. A hearer's plan set is a set of propositions that specifies his/her intentions which represents the state of affairs the hearer intends to bring about. Thus, an imperative is an instruction to the hearer to add p to his/her plan set."

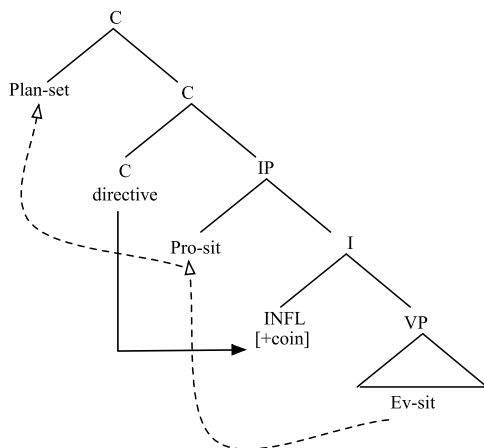
Translating Han's insight into our framework, we suggest that the plan set is represented as an abstract argument in SpecCP.⁵⁴ That is, just as INFL introduces an abstract argument in its specifier position, so does COMP. In fact this may be a general property of all functional categories (see Speas 2010 for some discussion). Directive force in COMP signals that the clause is an instruction consistent with the common assumption that COMP is the locus of clause-typing (Cheng 1991). We hypothesize that directive force in COMP values INFL as [+coin]. Accordingly, imperatives instruct the addressee to make it the case that the event situation coincides with the plan set. This relation is mediated by the pronominal argument introduced in SpecIP, which takes as its antecedent the plan set in SpecCP.

⁵³The realization of negative imperatives commonly differs from non-negative imperatives, though the form it takes depends on the language-specific choices of INFL features. For example, Hebrew has an imperative paradigm that is only used for non-negative imperatives; negative imperatives require future tensed verbs. If our analysis of imperatives is on the right track, this would suggest that this is an instance of fake tense compatible with [+coin].

(i) a. lex!
go.IMP
'Go!' b. al tilex!
NEG go.FUT.2.M.SG
'Don't go!'

⁵⁴See also Portner (2004) who uses the notion of a *To-do-list* instead of the *plan set* (cf. Portner 2012 for a recent overview discussion on the semantics of imperatives, as well as Zanuttini et al. 2012).

(60) C-valuation in imperatives



4.1.2 Counterfactuals and other unreal situations

Just as different types of predicates value INFL as either [+coin] or [-coin], so may different types of COMP. Above we proposed that imperative force in COMP values INFL as [+coin]. Here we propose that counterfactuality, which is associated with COMP, values INFL as [-coin], as illustrated in (61).

- (61) a. If I had a car, I would drive to the store.
 b. CP[COMP_[CF]] IP[INFL_[-coin]] VP[Ev-sit V]]
-

In contrast to imperative force, in English counterfactuality is not associated with a dedicated inflectional paradigm (though it is in other languages such as Blackfoot, see Sect. 4.3.2 below). This raises the question as to how COMP is associated with counterfactuality. Interestingly, in English, as in many other languages, counterfactuals are characterized by past tense marking. Past tense marking in this context is, however, not associated with temporal force, i.e., it is an instance of *fake* marking (Steele 1975; James 1982; Iatridou 2000). Evidence for this comes from the fact that past tense morphology on the verb can co-occur with a temporal adverb of present time in a counterfactual clause, but not in an indicative clause, as exemplified by the contrast in (62).

- (62) a. If I had a car right now, I would drive.
 b. *I had a car right now.

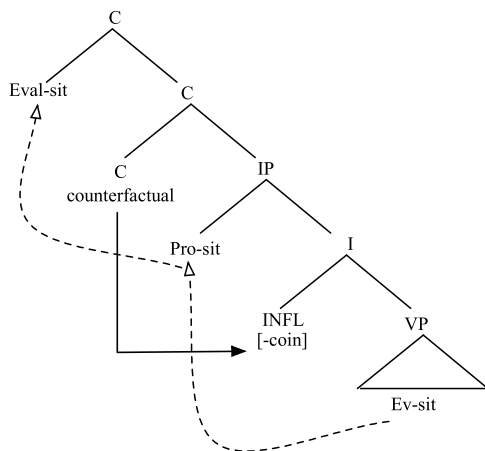
On our analysis, the absence of temporal force in (62a) follows from the assumption that past tense marking on the verb does not value INFL in this context. Instead, we propose that this is an instance of *fake past* in the sense defined in Sect. 3.2.2. It serves as a form of *past agreement*, just like past subjunctive morphology in Romance. (Note that counterfactual conditionals are sometimes referred to as subjunctive conditionals, von Stechow 2012.) However, instead of agreeing with past marking in the matrix clause, we propose that in this context it agrees with the counterfactual content in

COMP. Independent evidence for the dependence of the fake past marker in INFL on the counterfactual content in COMP comes from the fact that in counterfactuals the inflected auxiliary may move to COMP, as in (63). This differs from realis conditionals where past marking has temporal force (64a, b) and INFL-to-COMP is ruled out (64c).⁵⁵

- (63) Had she arrived, I would not have left.
- (64) a. If she really **arrived** last night she will be here today.
 b. *If she really arrived right **now**, she will be here today.
 c. *Has she really arrived, she will be here.

But what is the event situation anchored to in this context? Following Mezhevich (2006, 2008a, 2008b), we assume that there is an abstract evaluation situation argument in SpecCP, relative to which the event is evaluated (cf. also Zagana 2003). As with imperatives, the ordering between the event situation and the evaluation situation is mediated by the pronominal situation argument in SpecIP, which takes the evaluation situation as its antecedent. Consequently, the event situation is asserted to not coincide with the evaluation situation (see also Mezhevich 2008b for an analysis similar in spirit). This is schematized in (65).⁵⁶

(65) C-valuation in counterfactuals



⁵⁵The fact that the same complementizer (*if*) is used in both realis and counterfactual conditionals indicates that it does not serve to value INFL. Rather, m-valuation by the tense morphology on the verb applies in realis conditionals, and COMP valuation by the fake past in COMP applies in counterfactual conditionals. Past tense morphology on the inflected verb is obligatory in the latter case, but optional in the former.

⁵⁶An anonymous reviewer raises an interesting question about sentences that contain both a desiderative matrix predicate and an embedded counterfactual situation, like the Spanish example below:

- (i) Quise haber ido al concierto pero no pude.
 want.PRET.1.SG. to.have gone to.the concert but NEG be able.PRET.1.SG.
 'I wanted to have gone/would have liked to go the concert, but I could not.'

The question is whether INFL is valued by C-valuation or predicate valuation. We speculate that both types of valuation are needed here. Predicate valuation obtains, as in all desideratives, but in this case 'want' values C, and C values INFL. This added complexity is needed to derive the counterfactual interpretation of the desired eventuality.

On our account then, *counterfactuality* derives from a constellation of grammatical factors, each of which is independently attested, and thus not restricted to counterfactuals (see also Iatridou 2000).

- (i) INFL is valued by COMP (as in imperatives).
- (ii) INFL is valued as [-coin] (as in past indicatives, future irrealis infinitives and subjunctives).
- (iii) The event situation is anchored relative to the evaluation situation in SpecCP via the abstract pronominal situation in SpecIP.
- (iv) Past marking is *fake* because it does not relate the event situation to the utterance situation but instead to an evaluation situation.

In sum, our exploration of tenseless INFL in imperatives and counterfactuals has further demonstrated the usefulness of the proposed dissociation of substantive content from the functional category it is associated with. In particular, we have argued that in the absence of substantive content in INFL (i.e., in the absence of m-valuation), INFL may be valued by the substantive content associated with COMP. Furthermore, in the context of COMP-valuation, INFL anchors the event situation to the abstract argument in SpecCP via the pronominal situation argument in SpecIP. The content of the abstract argument in SpecCP differs depending on the content of COMP: it is a plan set in imperatives and an evaluation situation in counterfactuals.⁵⁷

4.2 COMP-valuation in Halkomelem

In this section, we investigate contexts of COMP-valuation in Halkomelem. We start with imperatives.

4.2.1 Imperatives

Halkomelem imperatives are characterized by a dedicated suffix *-lha* (66), which we analyze as instantiating COMP.

- (66) qw'eyl'ex-lha!
 dance-IMP
 'Dance!'

⁵⁷On the theory developed here, we would not expect fake marking to be restricted to tense-based languages, but rather that it might also be observable in location- and person-based languages. Interestingly, Nevins (2002) identifies fake distal marking in Burmese counterfactuals. In the indicative clause in (i) the distal marker *khé* signals that the event took place in a location distinct from the utterance location. However, in the counterfactual conditional in (ii) the same marker does not indicate a distal location. Instead it marks counterfactuality.

- (i) M^wei chau? khé Re
 snake scare KHE decl
 '(I) scared a snake (in another place before I arrived here).'
- (ii) Shèi θau? khé yin, nei kàun la gé lén-me
 medicine drink KHE if, stay good come KHE predictive-irrealis
 'If he took the medicine, he would have gotten better.'
- (Nevins 2002:442 (2))

Given this pattern, we suspect that Burmese, just like Halkomelem, is a language where INFL is valued by location marking. The evaluation of this claim has to be left for future research.

If in the context of imperatives INFL is valued by imperative force in COMP, we predict obligatory absence of m-valuation. This prediction is borne out. Locative auxiliaries are ruled out in this context.

- (67) *li/i qw'eyflex-lha
AUX dance-IMP

This pattern tells us something important about INFL: the obligatory absence of m-marking (either tense- or location-based) in imperatives is a formal property in our analysis. We could not have concluded this on the basis of English because tense marking in imperatives could be ruled out on semantic grounds. It is simply impossible to command somebody to do something they have already done, or are already doing. In a location-based system, however, there is no semantic incompatibility between location and imperative force. It is perfectly possible to command somebody to do something here or elsewhere. Our formal account permits a unified analysis: COMP-valuation excludes m-valuation.

4.2.2 Questions, conditionals, and negation

Halkomelem has three clause-types with an optional auxiliary, which can, but need not be, associated with spatial force: yes/no questions (68), conditionals (69) and negated clauses (70). Note that these clauses are all associated with subjunctive agreement rather than indicative agreement.

- (68) a. lám-a-chexw
go-Q-2SG.SUBJ
'Are you going?'
b. lí-a-cha lám
AUX-Q-FUT go
'Will he go?'
- (69) a. xélh cha te-l sqwálewel **we** lhémexw-es
sad FUT DET-1SG.POSS thought COMP rain-3SG.SS
'I'll be sad if it rains.'
b. xélh cha te-l sqwálewel **we** lí-s lhémexw
sad FUT DET-1SG.POSS thought COMP AUX-3SG.SS rain
'I'll be sad if it rains.'
- (70) a. éwe tsel q'óq'ey
NEG 1SG.SUBJ sick
'I'm not sick.'
b. éwe tsel lí-l q'óq'ey
NEG 1SG.SUBJ AUX-1SG.SS sick
'I'm not sick.'

All three clause-types are introduced by a particle in COMP. The yes/no particle *-a*, the conditional complementizer *we*, and the negative particle *ewe*. (See Wiltschko 2002 for arguments that Halkomelem negation occupies COMP.) If INFL is valued

by COMP, the locative auxiliary no longer serves to value INFL, and therefore loses its spatial deictic force. This is another instance of fake marking.⁵⁸

4.3 COMP-valuation in Blackfoot

We now turn to contexts of COMP-valuation in Blackfoot.

4.3.1 Imperatives

Blackfoot has a dedicated imperative clause-type characterized by the suffix *-t*, as shown in (71).

- (71) Ooyít!
 ooyi-t
 eat.AI-IMP
 ‘Eat!’ (adapted from Frantz 1991:114 (r))

In the context of plural subjects, which trigger the agreement suffix *-k*, we assume that the imperative suffix *-t* is deleted, as in (72).⁵⁹

- (72) Ooyík!
 ooyi-t-k
 eat.AI-IMP-PL
 ‘Eat!’

If Blackfoot imperatives are derived via COMP-valuation, we predict the obligatory absence of m-valuation. This prediction is borne out: the local marker *-hp* is impossible.

- (73) *Ooyíht! / Ooyíhp!
 ooyi-hp-t
 eat.AI-LOCAL-IMP
 intended: ‘Eat!’

The ungrammaticality of (73) follows from our analysis. In Blackfoot, participant marking determines m-valuation of INFL, but imperatives require COMP-valuation, and this is impossible in the context of m-valuation.

⁵⁸COMP-valuation in Halkomelem appears to differ from COMP-valuation in English. While in Halkomelem, the distribution and interpretation of auxiliaries is affected whenever COMP is present, in English, COMP only affects the interpretation of past marking in the context of counterfactuals. A proper analysis of this difference would require a better understanding of the syntax of COMP, which goes beyond the scope of this paper.

⁵⁹This treatment of the imperative verb morphology is consistent with that of other verb paradigms, in that the stem is followed first by a paradigm marker and then by a plural agreement marker. Frantz (1991:114) develops an alternative analysis of *-t* as 2nd person singular agreement in the imperative paradigm. His alternative provides a straightforward account of the complementarity of *-t* and *-k*, but would require us to assume that the imperative paradigm has a morphological structure that is very different from all others.

4.3.2 Blackfoot requires dedicated counterfactual marking

Unlike English and Halkomelem, Blackfoot has a dedicated marker—the suffix *-opi*—for counterfactual conditionals and wishes.⁶⁰

- (74) a. *Nitsitssáyoyihtopi nitáaksoyi ánnohka.*
 nit-it-say-ooyi-**htopi** nit-yaak-ioyi annohka.
 1-then-NEG-eat.AI-UNREAL 1-FUT-eat.AI now
 ‘If I hadn’t eaten then, I’d eat now.’
 (adapted from Frantz 1991:115 (x))
- b. *Nikkámináanatao’topi.*
 n-ikkam-inaanat-a-**o’topi**.
 1-if-own.TA-DIR-UNREAL
 ‘How I should like to own him.’ (adapted from Frantz 1991:115 (z))

Suppose that the existence of a dedicated marker for counterfactuality in Blackfoot is not a coincidence. We speculate that Blackfoot does not have the right ingredients to derive counterfactuality from other types of COMP or INFL marking. It cannot be derived by (fake) participant marking. We have to leave open the question whether this is necessarily the case in participant-based languages, and if so how it follows. A detailed investigation of the morpho-syntax of COMP within the framework developed here is necessary.

4.4 Summary

The goal of this section was to investigate the properties of INFL without substantive content in different types of CPs. We have argued that in the absence of m-valuation, the substantive content of a higher functor (COMP) values INFL. In particular, imperative content in COMP values INFL as [+coin] while counterfactual content in COMP values INFL as [-coin]. The result is the absence of temporal force associated with past marking. Furthermore, in the context of COMP-valuation, INFL no longer serves as a deictic anchor; instead, the abstract pronominal situation in SpecIP is anaphorically related to the abstract argument in SpecCP. We conclude that INFL functions as a deictic anchor only in the context of m-valuation. Recall that in the context of predicate valuation, anchoring is relative to the matrix event resulting in a sequencing effect. The three valuation strategies for INFL are summarized in Table 4.

5 Implications for the tense-case connection

The primary goal of this paper is to argue that INFL is a universal functional category, which is independent of its substantive content. As a consequence, INFL cannot be

⁶⁰The examples in (74) contain allomorphs of *-opi*. This suffix appears to be truly dedicated to counterfactuals. It is used neither in realis conditionals nor in other irrealis contexts (Bar-el and Denzer-King 2008).

Table 4 Valuation strategies for INFL

Valuation strategy	Source of valuation	INFL feature	Anchoring argument	Semantic function	Clause type
m-Valuation	Tense/location/person inflection	[+coin]	Utterance situation	Deictic anchoring	Matrix indicative
	Tense/location/person inflection	[-coin]	Utterance situation	Deictic anchoring	Matrix indicative
Predicate valuation	Matrix verb	[+coin]	Matrix event situation	Event sequencing	Simultaneous infinitive/subjunctive
	Matrix verb	[-coin]	Matrix event situation	Event sequencing	Future irrealis infinitive/subjunctive
COMP valuation	COMP	[+coin]	Plan set	Modal anchoring	Imperative
	COMP	[-coin]	Evaluation situation	Modal anchoring	Counterfactual

equated with TENSE (contra Pollock 1989; Chomsky 1995a). In this paper we have seen evidence from tenseless languages as well as from tenseless clause-types.

Our exploration of tenselessness would not be complete, however, without considering the implications of our analysis for case theory. In particular, there appears to be a tight connection between tense and case, which has figured prominently in the development of case theory. In English, this tense-case connection manifests itself in the following way: nominative subjects are possible in tensed clauses, such as (75a), but are ruled out in infinitives, such as (75b).

- (75) a. Yoshi played.
b. Yoshi tried (*he) to play.

In our terms, English nominative case is available if INFL is valued by m-tense. What about Halkomelem and Blackfoot? Is nominative case available if INFL is valued by m-location or m-participant? The answer to this question would tell us something about the nature of the tense-case connection. Is it a connection between tense and case? Or is it a connection between m-valued INFL and case?

Empirically, we observe that case does not play a role in nominal licensing in the tenseless languages under investigation (Wiltschko 2002; Ritter and Wiltschko 2004; Ritter and Rosen 2005; Wiltschko 2011). That is, the distribution of overt DPs is not regulated by abstract case. Halkomelem and Blackfoot both have polysynthetic characteristics. Overt argument DPs are always possible but never obligatory, and their linearization is not restricted by case-theoretic considerations. In addition, we observe no infinitive effect. Rather, overt DPs are possible even if INFL is not m-valued. For example, in the context of predicate valuation in Halkomelem, an overt DP subject is possible inside the embedded clause (76) even if it is co-referential with a (pronominal) argument in the matrix clause.

- (76) s-tl'i'-s kw'-s nem'-s toqw' ...
 NOM-want-3POSS DET-NOM go-3POSS return.home
 ... **the se'wey'qe** 'e te-n'a sneyt
 DET man.PL OBL DET-DEM night
 'The man wants to go home tonight.'

Table 5 M-valuation and DP-licensing

Content of m-valuation	DP-marking
INFL _{TENSE}	DP _{TENSE} = case
INFL _{LOCATION}	DP _{LOCATION} = location marking
INFL _{PARTICIPANT}	DP _{PARTICIPANT} = person marking

Thus, the absence of case in Blackfoot and Halkomelem may suggest that case is restricted to *tense*. As briefly discussed in Ritter and Wiltschko (2009), this conclusion is supported by theoretical considerations. According to Williams (1994), case is a manifestation of tense marking on D. Since tense on D is uninterpretable, the result is a purely formal marker, which we call case (see also Haeberli 2002; Pesetsky and Torrego 2001). Since both location and participant marking are interpretable on D (at least at an intuitive level), it follows immediately that the type of tenselessness we find in Halkomelem and Blackfoot correlates with caselessness. Instead of case-marked DPs, Halkomelem has DPs marked for location while Blackfoot has DPs marked for participancy (person). This is summarized in Table 5.

On closer inspection, however, the correlation between (un)interpretability of tense on D and case does not hold up. First, there is no principled reason as to why tense on D should not be interpretable. In fact, there are languages, including Halkomelem, in which nouns can be marked and crucially interpreted as past (77) or future (78) (see Nordlinger and Sadler 2004 for a detailed discussion of languages with nominal tense).⁶¹

- (77) a. tel má:l-**elh** b. tel xél tel-**elh**
 my father-PAST my pencil-PAST
 ‘my late father’ ‘my former pencil’ (Burton 1997:67)
- (78) a. te-l swáqeth-**cha** b. te-l lálém-**cha**
 my husband-FUT my house-FUT
 ‘my future husband’ ‘my future house’

Second, there are languages, such as Somali, in which tense is interpretable on D, but at the same time nominal phrases are case-marked (cf. Lecarme 2004).

- (79) a. dhibaata-da Khalíj-ku welí way taagán tahay
 problem-DET.F Gulf-DET.M[+NOM] still F.3SG permanent is
 ‘The Gulf crisis still persists.’
- b. dhibaata-dii Khalíj-ku wáy dhammaatay
 problem-DET.F[+PAST] Gulf-DET.M[+NOM] F.3SG ended[+PAST]
 ‘The Gulf crisis ended.’ (Lecarme 2004:444)

Third, even in Blackfoot there are nominal phrases whose linear order is fixed. In particular, while determiners in Blackfoot are generally obligatory, object NPs may re-

⁶¹Whether or not these temporal morphemes are really tense or aspect, as argued in Tonhauser (2007, 2008) is tangential to the present claim. What is crucial is that there is no reason to assume that nominals are intrinsically incompatible with temporality.

main bare. But such bare NPs must follow the verb, as illustrated below (see Glougie 2000).

- (80) a. *Omiksi nináíks ítyaapiyaa píútaa.*
 om-iksi ninaa-iksi ii-yaapi-yi-aawa **piútaa**
 DEM-PL man-PL PST-see.AI-PL-3PL.PRN **eagle**
 ‘The men saw an eagle.’ (adapted from Glougie 2000)
- b. **Omiksi nináíks píútaa ítyaapiyaa.*
 c. **Ítyaapiyaa omiksi nináíks píútaa.*

Inasmuch as ordering restrictions on nominal arguments are indicative of case, we have to conclude that the availability of case does not depend on INFL being valued by tense.

In fact, it turns out that even in tensed languages the absence of m-valuation is not a reliable predictor of caselessness. Relevant examples include English imperatives (81), Romance subjunctives (82) and Hungarian infinitives (83) (Szabolcsi 2009), all of which allow for overt nominative subjects.

- (81) You leave!
- (82) Il faut que tu saches la vérité.
 it is.necessary that **you.NOM** know.SUBJ the truth
 ‘You need to know the truth.’
- (83) Senki nem Akart csak ő leül-ni.
 Nobody not wanted-3SG only he/she sit-INF
 ‘Nobody wanted it to be the case that only he/she takes a seat.’

In light of these considerations we have to conclude that the tense-case connection must be revisited, but we leave this as a question for future research (see Wiltchko 2011 for discussion).

6 Conclusion

To conclude, we summarize what we have learned about the composition of INFL from our exploration of tense, tenseless languages, and tenseless constructions (Sect. 6.1). We then briefly evaluate existing theories of tense in light of the patterns we found (Sect. 6.2). Finally, we outline the research agenda our proposal defines (Sect. 6.3).

6.1 The composition of INFL

The central goal of this paper was to make the case for INFL as a universal anchoring category, which exists independently of language-specific substantive content such as *tense*. We first discussed evidence from language variation: tenseless languages differ in the substantive content they associate with INFL. We saw location or participant marking in the absence of tense marking. Second, we discussed evidence from clause-types where INFL is not associated with substantive content, including infinitives,

Table 6 Valuation strategies across languages and clause type

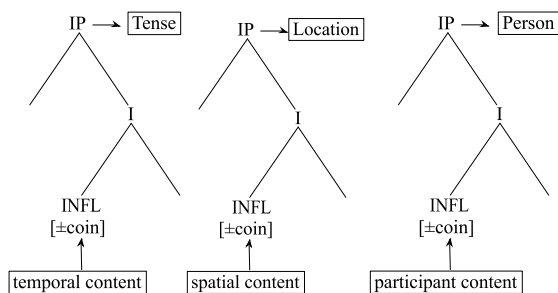
	Result	Anchor	Substantive content	Example
M-valuation with deictic content	Deictic anchoring	Utterance situation	Past/present Distal/proximate Other/local	Root indicative clause
M-valuation without content	Dependency	Embedding predicate	–	Blackfoot conjunct
Predicate valuation	Sequencing	Embedding event situation	Aspectual verb	Simultaneous infinitive
			Future verb	Future irrealis infinitive
COMP-valuation	Modal anchoring	Evaluation world	Past	Counterfactuals
		Plan set	Directive force	Imperatives

subjunctives, imperatives, and counterfactuals. And finally we briefly discussed the implications of our proposal for case-theory.

This exploration of tenseless languages and tenseless clauses has allowed us to gain insight into the composition of INFL. In particular, we have seen evidence that INFL is intrinsically, and thus universally, associated with an unvalued coincidence feature [*ucoin*], which serves to anchor the eventuality encoded in the VP. As summarized in Table 6, the coincidence feature derives deictic anchoring, sequencing and dependency, as well as anchoring to plan sets or evaluation situations, depending on the local context. That is, SpecIP is associated with an abstract pronominal situation argument (Pro-sit). In root indicative clauses this pronominal argument is interpreted deictically. We assume that this is a last resort strategy in the absence of a local antecedent. Thus, in indicative root clauses m-valuation results in deictic anchoring. In Blackfoot conjunct clauses, m-valuation is contentless, and INFL anchors relative to an argument of the embedding predicate. In infinitival and subjunctive clauses, [*ucoin*] is valued by the embedding predicate and the embedded event is anchored relative to the event denoted by the matrix predicate. This results in a sequencing effect in the absence of tense (simultaneous vs. future irrealis). Finally, [*ucoin*] may be valued by the substantive content associated with the embedding functor, COMP, whose Spec hosts an evaluation situation in counterfactuals or a plan set in imperatives.

If this analysis is on the right track, it provides support for the assumption that there is a *universal functional spine* (including INFL, among other functional categories), and that functional categories do not require dedicated morpho-syntactic features to trigger their projection. We submit that it is this spine that is responsible for the universal characteristics of categories. The fact that languages differ in the categories they make use of is a direct result of the dissociation of the specific content from the category. That is, different languages may associate different types of content with the same universal category (INFL). The result is different language-specific categories as illustrated in (84) (see, Wiltschko 2014).

(84) The relation between language-specific categories and the universal spine



6.2 Alternatives to parametric substantiation

The essence of our proposal is that the morpho-syntactic category TENSE is decomposable into its substantive content (*present* vs. *past*) and the abstract functional category that hosts it, namely INFL. We now turn to a brief discussion of the patterns we found in light of existing alternative theories of TENSE. In particular, we consider two views. The first is the Pollockian view according to which functional categories are (i) universal and (ii) identified (and thus labeled) by their substantive content. This view is most explicitly spelled out in the work of Cinque (1999) and subsequent work. Consequently, we label this view the *cartographic view*. The second view is the one according to which functional categories are entirely made up of features and do not exist as primitives. On this view, the category TENSE derives from the features that it is comprised of (e.g., *past*). This is a view common to many Minimalist analyses and is most explicitly spelled out in the work of Collins (2002), where labels are completely eliminated. We refer to this view as the *labelfree view*. We now evaluate these views in light of the patterns we have found. We focus on how they handle the three findings of our proposal repeated below:

- (i) INFL can associate with substantive content other than *present* or *past*.
- (ii) *Present* or *past* marking may occur without associating with INFL.
- (iii) INFL may remain without substantive content.

Let us start with the first finding. In light of the cross-linguistic variation we have observed (which we take to show that INFL can associate with content other than tense), the cartographic view would predict that all languages have TENSE, LOCATION, and PERSON, whether they are overtly spelled out or not. And without further stipulation, the cartographic approach would lead us to expect that all or any combination of these categories could be spelled out. What we have seen so far, however, is complementarity, which is of course predicted by the proposal developed here. According to classic structuralist assumptions, complementarity is the hallmark of identity, supporting the view that TENSE, LOCATION, and PERSON are all instances of the same category, namely INFL.⁶²

⁶²While our proposal clearly predicts complementarity, it is not so clear whether this complementarity should hold for a language as a whole, or whether one and the same language could allow for variation.

Similar considerations hold for the labelfree view. There is no reason to assume complementarity of TENSE, LOCATION, and PERSON. And moreover, without additional assumptions, it is not clear why an anchoring category is needed in the first place.

The second finding follows from the dissociation of substantive content from its category. We have seen that features with substantive content such as *present* and *past* may indeed occur independently of the functional category that hosts them. On the cartographic view, this may be an option, though it is not clear why a past marker should not associate with the functional category that is defined by temporal content. On the labelfree view, however, this pattern is completely unexpected because there is no way to distinguish past marking that associates with a functional category and past marking that does not.

Finally, the third prediction of our proposal, namely the existence of INFL without substantive content, is unexpected on both the cartographic and the labelfree view. If the identity of a functional category were defined by its substantive content, as in the cartographic view, then we would not expect INFL or any other functional category to exist without substantive content. Similarly, if functional categories as such do not exist but instead are merely comprised of the features that compose them—as in the labelfree view—we would not expect to find evidence for INFL in the absence of substantive content.

It may be possible to supplement both the cartographic view and the labelfree view with assumptions that permit an account of the patterns of tense and tenselessness we have observed, but this would undoubtedly come at a substantial price. In contrast, on the proposal developed here these patterns are predicted to occur. Thus, we conclude that the Parametric Substantiation Hypothesis is a more desirable approach to functional categories in general, and INFL in particular.

6.3 Parametric substantiation as a research agenda

The Parametric Substantiation Hypothesis has methodological implications as well. In particular, the apparent absence of a functional category in a given language may be misleading. We have seen in this paper evidence that tenseless languages as well as tenseless constructions make use of one and the same formal anchoring category, namely INFL. The content of INFL may vary, but its core function is universally fixed.

As such, the Parametric Substantiation Hypothesis provides us with a new research agenda: to identify universal functional categories which exist independently of their substantive content, to identify the core function associated with those categories, and finally to identify the range of variation these categories allow for.

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That is, it may be possible that within a given language, INFL can be m-valued by features of different content. This would be akin to ergative splits conditioned by tense, aspect, or person. We leave this option for future research.

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